

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: DAWN GARRETT Examiner #: 76107 Date: June 24, 2004  
 Art Unit: 1774 Phone Number 302-272-1523 Serial Number: 10/693,121  
 Mail Box and Bldg/Room Location: Rm 505 SC 75 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Electroluminescent Device w/ Anthracene Derivative  
 Inventors (please provide full names): Lelia Cosimbescu, William Vreeland, Host  
Scott Conley, Jeri Mount  
 Earliest Priority Filing Date: 10/24/2003

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search formula (I) attached as part of an electroluminescent device.

Thank you.

\*\*\*\*\*

## STAFF USE ONLY

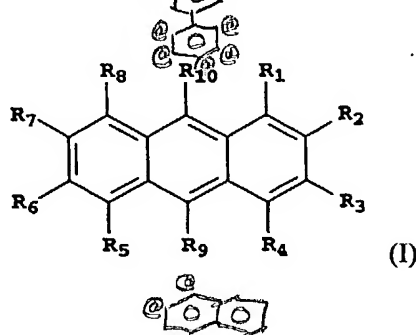
	Type of Search	Vendors and cost where applicable
Searcher: <u>ES</u>	NA Sequence (#) _____	STN <u>\$300.91</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>(1)</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic <u>(1)</u>	Dr. Link _____
Date Completed: <u>6-30-04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>5</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>80</u>	Other _____	Other (specify) _____

10/693,121

-41-

What is claimed is:

1. An OLED device comprising an anode and a cathode and located there-between a light emitting layer containing a light emitting dopant and a host comprising a monoanthracene derivative of formula (I):



wherein

R<sub>1</sub>-R<sub>8</sub> are H;

(R<sub>9</sub> is not the same as R<sub>10</sub>; ) *(be aware this is hard for us to control)*

R<sub>9</sub> is a naphthyl group having no fused rings with aliphatic carbon ring members; and

R<sub>10</sub> is a biphenyl group having no fused rings with aliphatic carbon ring members;

provided that R<sub>9</sub> and R<sub>10</sub> are free of amines and sulfur compounds.

2. The device of claim 1 wherein R<sub>9</sub> is a naphthyl group of two fused rings.

3. The device of claim 2 wherein R<sub>9</sub> is an unsubstituted naphthyl group.

4. The device of claim 1 wherein the naphthyl group contains a further fused ring.

5. The device of claim 1 wherein the naphthyl group contains two or more further fused rings.

6. The device of claim 1 wherein the naphthyl group is substituted with at least one substituent selected from fluorine, hydroxy, cyano, and alkyl, alkoxy, aryloxy, aryl, carboxy, trimethylsilyl and heterocyclic oxy groups.
7. The device of claim 1 wherein  $R_9$  is a 2-naphthyl group.
8. The device of claim 1 wherein  $R_{10}$  is an unsubstituted biphenyl group.
9. The device of claim 1 wherein at least one of the phenyl rings has a ring fused thereto.
10. The device of claim 1 wherein the biphenyl contains two phenyl ring groups without fused rings.
11. The device of claim 10 wherein the biphenyl is a 2-biphenyl.
12. The device of claim 10 wherein the biphenyl is a 3-biphenyl.
13. The device of claim 10 wherein the biphenyl is a 4-biphenyl.
14. The device of claim 10 wherein the rings are unsubstituted.
15. The device of claim 1 wherein the biphenyl is substituted with at least one substituent selected from fluorine, hydroxy, cyano, and alkyl, alkoxy, aryloxy, aryl, carboxy, trimethylsilyl and heterocyclic oxy groups
16. The device of claim 1 wherein there is also present in the light emitting layer a light emitting compound.

17. The device of claim 16 wherein the light emitting compound emits blue light.
18. The device of claim 16 wherein the light emitting compound emits green light.
19. The device of claim 1 including in one or more light emitting layers compounds sufficient to emit white light.
20. The device of claim 1 including a co-host.
21. The device of claim 20 including a polymeric co-host.
22. The device of claim 20 including an oxinoid compound.
23. The device of claim 22 wherein the oxinoid is Alq.
24. A display incorporating the device of claim 1.
25. An area lighting system incorporating the device of claim 1.

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FILE 'REGISTRY' ENTERED AT 19:46:45 ON 30 JUN 2004  
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L1 FILE 'LREGISTRY' ENTERED AT 18:09:59 ON 30 JUN 2004  
STR

L2 FILE 'REGISTRY' ENTERED AT 18:40:28 ON 30 JUN 2004  
50 S L1  
L3 2529 S L1 FUL  
SAV L3 YAM353/A  
E C60H42  
L4 144 S E3  
E C48H34  
L5 57 S E3  
L6 7 S (L4 OR L5) AND L3

L7 FILE 'HCAPLUS' ENTERED AT 18:49:28 ON 30 JUN 2004  
40169 S IKEDA ?/AU  
L8 26029 S ARAI ?/AU  
L9 2034 S FUNAHASHI ?/AU  
L10 5865 S HOSOKAWA ?/AU  
L11 2 S L7 AND L8 AND L9 AND L10  
SEL L11 1-2 RN

L12 FILE 'REGISTRY' ENTERED AT 18:49:51 ON 30 JUN 2004  
108 S E1-E108  
L13 40 S L12 AND L3  
L14 570225 S ?ETHENYL?/CNS  
L15 11 S L13 AND L14  
E C58H46  
L16 17 S E3  
L17 1 S L15 AND L16

L18 FILE 'HCAPLUS' ENTERED AT 18:56:31 ON 30 JUN 2004  
1 S L17

L19 FILE 'BEILSTEIN' ENTERED AT 18:57:34 ON 30 JUN 2004  
STR L1  
L20 STR L1

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5 S L20 SSS SAM SUB=L3

L22 88 S L20 SSS FUL SUB=L3  
SAV L22 GAR121/A

FILE 'HCA' ENTERED AT 19:15:30 ON 30 JUN 2004

L23 43 S L22  
L24 84014 S (ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO OR  
L25 31 S L23 AND L24  
SEL L25 1-31 HIT RN

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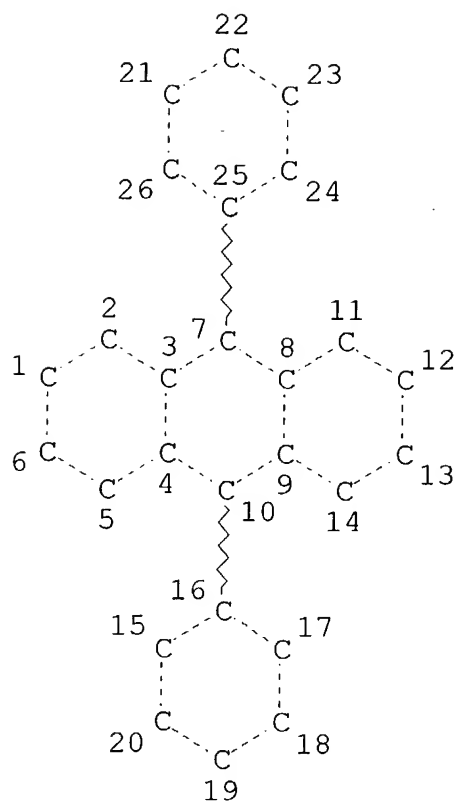
L26 73 S E1-E73  
L27 21 S C68H48/MF  
L28 1 S C55H37I/MF  
L29 13 S C90H54/MF  
L30 9 S C43H28N2/MF  
L31 24 S C46H28/MF  
L32 58 S C40H26/MF  
L33 6 S C55H38/MF  
L34 17 S C70H50/MF  
L35 11 S C41H26CL2/MF  
L36 40 S C52H34/MF  
L37 17 S C52H30/MF  
L38 11 S C96H66/MF  
L39 3 S C42H28CL2O/MF  
L40 23 S C58H38/MF  
L41 79 S C42H28/MF  
L42 2 S C54H38O/MF  
L43 2 S C49H34CL2/MF  
L44 1 S C68H43N/MF  
L45 4 S C40H25BR/MF  
L46 23 S C66H44/MF  
L47 1 S C58H34N2O/MF  
L48 366 S L27-L47  
L49 32 S L48 AND L26

FILE 'HCA' ENTERED AT 19:46:24 ON 30 JUN 2004

L50 22 S L49  
L51 22 S L50 AND L24

FILE 'REGISTRY' ENTERED AT 19:46:45 ON 30 JUN 2004

=> d l22 que stat  
L1 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

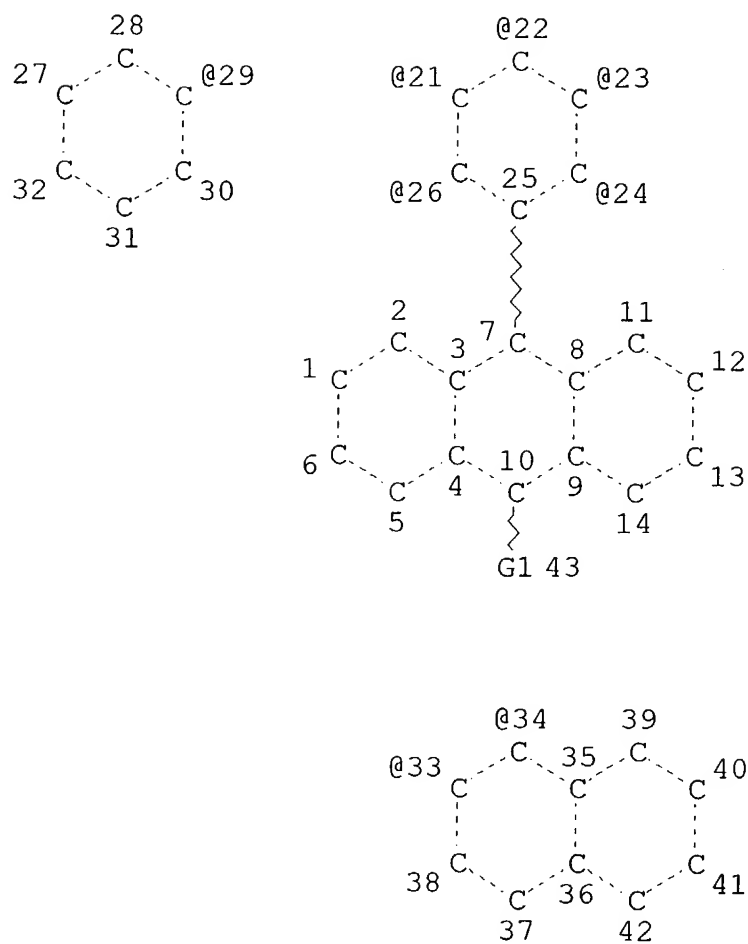
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NUMBER OF NODES IS 26

## STEREO ATTRIBUTES: NONE

L3 2529 SEA FILE=REGISTRY SSS FUL L1

L20 STR



VAR G1=34/33  
VPA 29-24/23/22/21/26 U  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 37

STEREO ATTRIBUTES: NONE  
L22 88 SEA FILE=REGISTRY SUB=L3 SSS FUL L20

100.0% PROCESSED 1635 ITERATIONS  
SEARCH TIME: 00.00.01

88 ANSWERS



=> file hca

FILE 'HCA' ENTERED AT 19:47:15 ON 30 JUN 2004

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=> d 151 1-22 cbib abs hitstr hitind

L51 ANSWER 1 OF 22 HCA COPYRIGHT 2004 ACS on STN

140:261163 Top emission organic **EL** device. Yasukawa, Hiroshi; Takizawa, Masatoshi; Arai, Michio (TDK Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2004079421 A2 20040311, 21 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-240751 20020821.

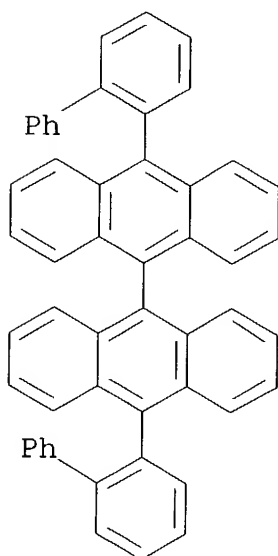
AB In a top emission org. **EL** device, esp. a device which **emits** white **light** by combining lights from  $\geq 2$  emissive layers, interference of lights from a reflective layer with visible light reflectance  $\geq 50\%$  and light(s) from the emissive layer(s) has been avoided by optimizing thicknesses of constituting layers or by optimizing thicknesses and refractive indexes of constituting layers.

IT 172285-83-5

(lower luminescent species; top emission org. **EL** device)

RN 172285-83-5 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)



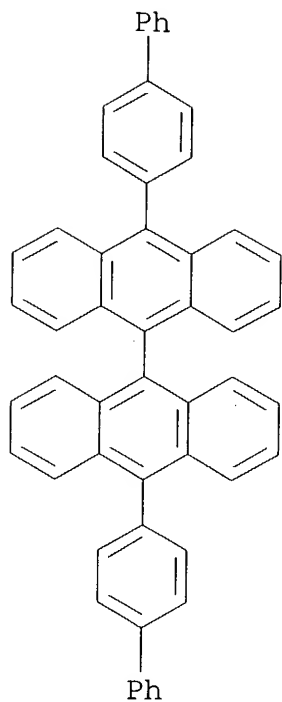
IC ICM H05B033-14  
ICS H05B033-22; H05B033-24  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST org **electroluminescent** device front optical pickup  
IT 20441-06-9  
(hole injection layer; top emission org. **EL** device)  
IT 123847-85-8  
(hole transporting layer; top emission org. **EL** device)  
IT 154853-81-3 **172285-83-5**  
(lower luminescent species; top emission org. **EL** device)  
IT 517-51-1, Rubrene 344396-72-1, IDE 120 384828-46-0, IDE 102  
(luminescent layer; top emission org. **EL** device)  
IT 25583-20-4, Titanium nitride (TiN)  
(reflective layer; top emission org. **EL** device)  
IT 265989-62-6, Germanium indium oxide  
(top emission org. **EL** device)  
IT 50926-11-9, ITO  
(transparent electrode; top emission org. **EL** device)

L51 ANSWER 2 OF 22 HCA COPYRIGHT 2004 ACS on STN  
140:243296 Organic **electroluminescent** devices and organic luminescent medium. Matsuura, Masahide; Funahashi, Masakazu; Fukuoka, Kenichi; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2004018588 A1 20040304, 77 pp. DESIGNATED STATES: W: CN, JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP8463 20030703. PRIORITY: JP 2002-211308 20020719.

AB An org. **electroluminescent** device comprises a pair of electrodes and an org. **luminescent** medium layer which is placed between the electrodes and contains (A) a specific arylamine and (B) at least one compd. selected from among specific anthracene derivs., spiro fluorene derivs., fused-ring compds., and metal complexes; and an org. **luminescent** medium contg. the components (A) and (B). The org. **electroluminescent** device exhibits high color purity, excellent heat resistance and a long lifetime and emits blue to yellow light at high efficiency, and the org. **luminescent** medium is suitable for use in such devices.

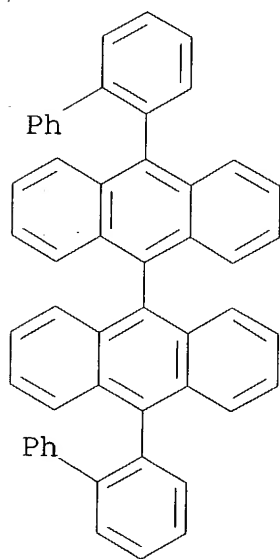
IT **172285-79-9 172285-83-5**  
(org. **electroluminescent** devices and org. **luminescent** medium)

RN 172285-79-9 HCA  
CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



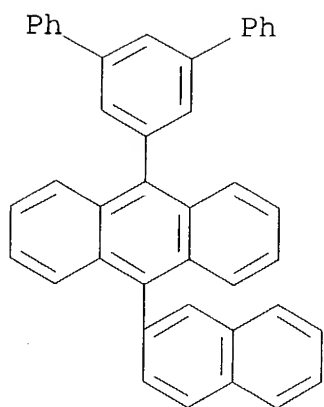
RN 172285-83-5 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA  
INDEX NAME)



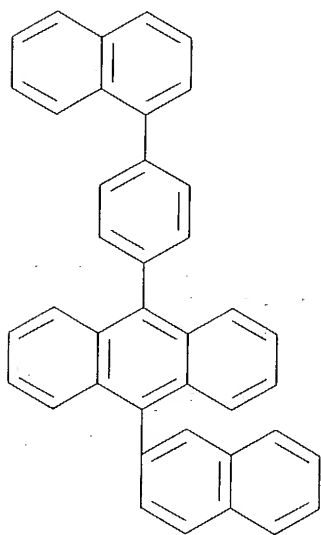
IC ICM C09K011-06  
ICS H05B033-14; H05B033-22

- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 74
- ST **org electroluminescent luminescent**  
medium; anthracene spiro fluorene fused ring compd metal complex
- IT **Electroluminescent devices**  
(org. **electroluminescent** devices and **org. luminescent** medium)
- IT 76656-53-6 122648-99-1 131625-67-7 171408-93-8  
**172285-79-9 172285-83-5** 220721-68-6  
244281-01-4 279672-22-9 349666-25-7 400606-81-7 475461-15-5  
668019-24-7 668019-64-5 668019-76-9 668019-96-3 668020-07-3  
668020-14-2 668020-20-0 668020-26-6 668020-28-8 668020-34-6  
668020-39-1 668020-46-0 668020-53-9 668020-61-9 668020-67-5  
668020-74-4 668020-81-3 668020-88-0  
(org. **electroluminescent** devices and **org. luminescent** medium)
- L51 ANSWER 3 OF 22 HCA COPYRIGHT 2004 ACS on STN
- 140:243295 Organic **electroluminescence** device and anthracene derivative. Ikeda, Hidetsugu; Ido, Motohisa; Funahashi, Masakazu (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2004018587 A1 20040304, 59 pp. DESIGNATED STATES: W: CN, IN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP10402 20030818. PRIORITY: JP 2002-243545 20020823. X
- AB An org. **electroluminescence** device comprises a neg. electrode and a pos. electrode and, interposed there between, one or two or more org. thin-film layers including at least a luminescent layer, wherein at least one of the org. thin-film layers contains an anthracene deriv. of specified structure added alone or as a component of mixt.; and an anthracene deriv. of asym. specified structure. There are provided an org. **electroluminescence** device of high luminescence efficiency and long life and an anthracene deriv. for realizing the same.
- IT **667940-32-1 667940-34-3 667940-36-5**  
(anthracene deriv. for org. **electroluminescence** device)
- RN 667940-32-1 HCA
- CN Anthracene, 9-(2-naphthalenyl)-10-[1,1':3',1''-terphenyl]-5'-yl-(9CI) (CA INDEX NAME)



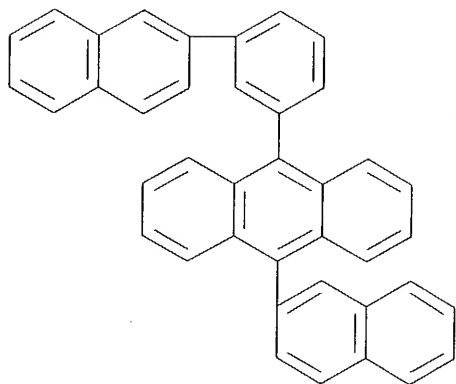
RN 667940-34-3 HCA

CN Anthracene, 9-(2-naphthalenyl)-10-[4-(1-naphthalenyl)phenyl]- (9CI)  
(CA INDEX NAME)



RN 667940-36-5 HCA

CN Anthracene, 9-(2-naphthalenyl)-10-[3-(2-naphthalenyl)phenyl]- (9CI)  
(CA INDEX NAME)



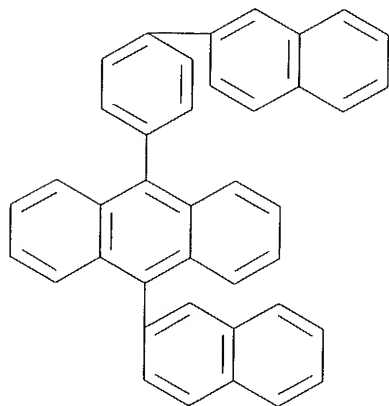
IT 667940-24-1P 667940-26-3P 667940-28-5P

667940-30-9P

(prepn. of anthracene deriv. for org. electroluminescence device)

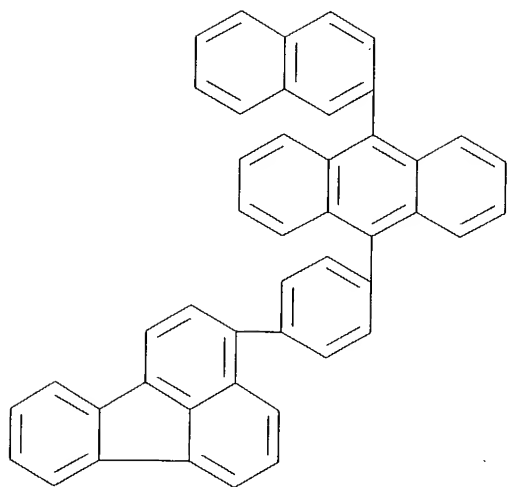
RN 667940-24-1 HCA

CN Anthracene, 9-(2-naphthalenyl)-10-[4-(2-naphthalenyl)phenyl]- (9CI)  
(CA INDEX NAME)



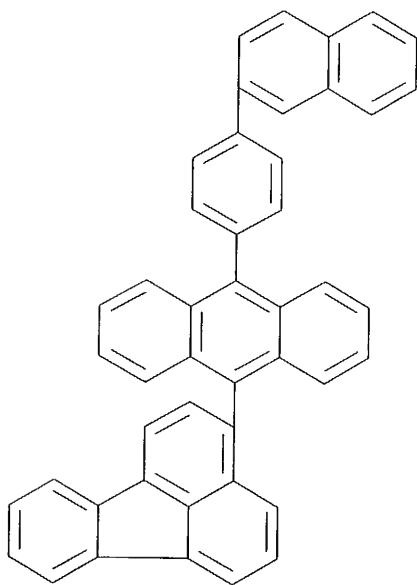
RN 667940-26-3 HCA

CN Fluoranthene, 3-[4-[10-(2-naphthalenyl)-9-anthracenyl]phenyl]- (9CI)  
(CA INDEX NAME)



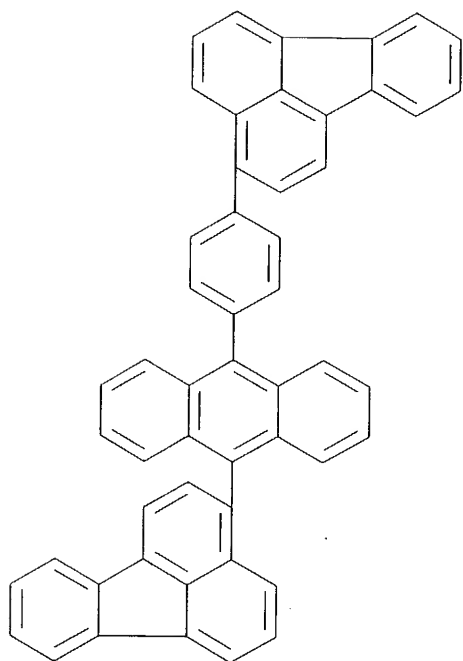
RN 667940-28-5 HCA

CN Fluoranthene, 3-[10-[4-(2-naphthalenyl)phenyl]-9-anthracenyl]- (9CI)  
(CA INDEX NAME)



RN 667940-30-9 HCA

CN Fluoranthene, 3-[4-[10-(3-fluoranthenyl)-9-anthracenyl]phenyl]-  
(9CI) (CA INDEX NAME)

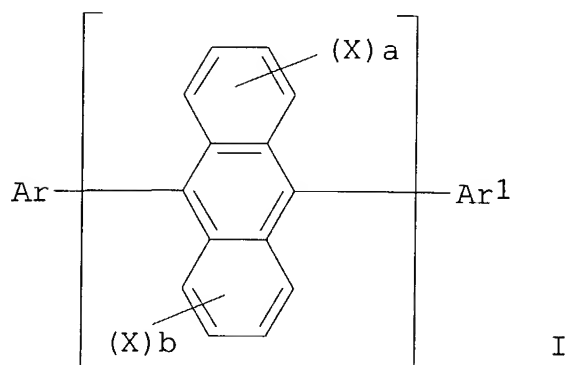


- IC ICM C09K011-06  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 74  
 ST org **electroluminescence** device anthracene deriv  
 IT **Electroluminescent** devices  
 (prepn. of anthracene deriv. for org. **electroluminescence** device)  
 IT 120-12-7D, Anthracene, deriv. 667940-32-1  
 667940-34-3 667940-36-5  
 (anthracene deriv. for org. **electroluminescence** device)  
 IT 667940-24-1P 667940-26-3P 667940-28-5P  
 667940-30-9P  
 (prepn. of anthracene deriv. for org. **electroluminescence** device)  
 IT 128-08-5, N-Bromosuccinimide 206-44-0, Fluoranthene 589-87-7,  
 4-Iodobromobenzene 591-18-4, 3-Iodobromobenzene 1564-64-3,  
 9-Bromoanthracene 13922-41-3 32316-92-0, 2-Naphthalene boronic  
 acid 359012-63-8  
 (prepn. of anthracene deriv. for org. **electroluminescence** device)  
 IT 22082-99-1P, 2-(4-Bromophenyl)naphthalene 204530-94-9P  
 597554-03-5P 667940-21-8P 667940-22-9P 667940-23-0P  
 (prepn. of anthracene deriv. for org. **electroluminescence** device)



L51 ANSWER 4 OF 22 HCA COPYRIGHT 2004 ACS on STN  
 140:225494 Anthracenes as **electroluminescent** substances for  
 organic **electroluminescent** devices. Ikeda, Shuji; Ido,  
 Motohisa; Funabashi, Masakazu; Shoji, Hiroshi (Idemitsu Kosan Co.,  
 Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2004059535 A2 20040226, 26  
 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-222990  
 20020731.

GI

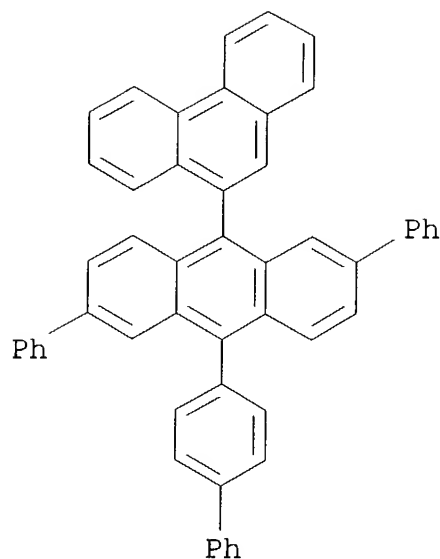


AB The anthracenes are I (X = halo, OH, NO<sub>2</sub>, cyano, C<sub>1</sub>-50 alkyl, aryl having 6-50 nucleus C atoms, C<sub>5</sub>-50 cycloalkyl, etc.; ≥2 of Z are aryl having 6-50 nucleus C atoms, C<sub>5</sub>-50 cycloalkyl, etc.; Ar = polycyclic aryl having 10-50 nucleus C atoms; Ar<sub>1</sub> = aryl having 6-50 nucleus C atoms; a, b = 0-4; a ≠ b ≠ 0; n = 1-3). Org. **electroluminescent** devices including emitter, electron transport, and/or hole transport layers show high luminescence intensity and efficiency at low voltage.

IT 660427-98-5P  
 (anthracenes as **electroluminescent** substances in  
 emitter, electron transport, and/or hole transport layers for  
 org. **electroluminescent** devices)

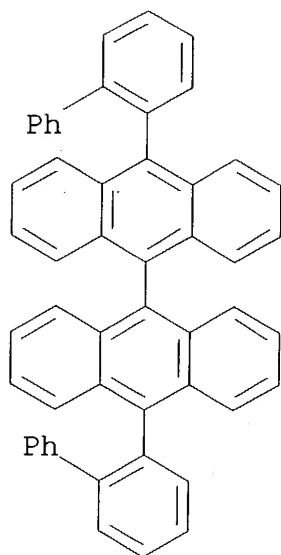
RN 660427-98-5 HCA

CN Anthracene, 9-[1,1'-biphenyl]-4-yl-10-(9-phenanthrenyl)-2,6-diphenyl-  
 (9CI) (CA INDEX NAME)



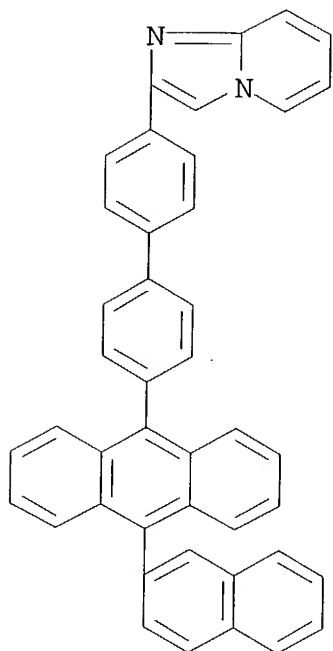
- IC ICM C07C013-58  
ICS C07C013-615; C07C015-60; C09K011-06; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25
- ST anthracene emitter org **electroluminescent** device; hole transport anthracene org **electroluminescent** device; electron transport anthracene org **electroluminescent** device; cyclohexyl naphthyl anthracene org **electroluminescent** device
- IT **Electroluminescent** devices  
Electron transport  
Hole transport  
(anthracenes as **electroluminescent** substances in emitter, electron transport, and/or hole transport layers for org. **electroluminescent** devices)
- IT Amines, uses  
(arom.; anthracenes as **electroluminescent** substances in emitter, electron transport, and/or hole transport layers for org. **electroluminescent** devices)
- IT Luminescent substances  
(**electroluminescent**; anthracenes as **electroluminescent** substances in emitter, electron transport, and/or hole transport layers for org. **electroluminescent** devices)
- IT Amines, uses  
(stilylamines; anthracenes as **electroluminescent** substances in emitter, electron transport, and/or hole transport

- layers for org. **electroluminescent** devices)
- IT 660427-95-2P 660427-96-3P 660427-97-4P **660427-98-5P**  
(anthracenes as **electroluminescent** substances in  
emitter, electron transport, and/or hole transport layers for  
org. **electroluminescent** devices)
- IT 154853-83-5  
(manuf. of anthracenes as **electroluminescent** substances  
in emitter, electron transport, and/or hole transport layers for  
org. **electroluminescent** devices)
- IT 27485-16-1P 131268-46-7P 660428-00-2P  
(manuf. of anthracenes as **electroluminescent** substances  
in emitter, electron transport, and/or hole transport layers for  
org. **electroluminescent** devices)
- IT 71-43-2, Benzene, reactions 86-90-8, 4-Bromophthalic anhydride  
92-52-4, Biphenyl, reactions 92-66-0, 4-Bromobiphenyl 98-80-6,  
Phenylboronic acid 573-17-1, 9-Bromophenanthrene 580-13-2,  
2-Bromonaphthalene 4441-56-9, Cyclohexylboronic acid 660427-99-6  
(manuf. of anthracenes as **electroluminescent** substances  
in emitter, electron transport, and/or hole transport layers for  
org. **electroluminescent** devices)
- L51 ANSWER 5 OF 22 HCA COPYRIGHT 2004 ACS on STN
- 140:101743 **Light emitting** device. Yamazaki,  
Shunpei; Arai, Yasuyuki (Semiconductor Energy Laboratory Co., Ltd.,  
Japan). U.S. Pat. Appl. Publ. US 2004004214 A1 20040108, 27 pp.  
(English). CODEN: USXXCO. APPLICATION: US 2003-426971 20030501.  
PRIORITY: JP 2002-140033 20020515.
- AB A **light emitting** device is described comprising  
**light emitting** elements formed between a  
lamination layer and an inorg. compd. layer that transmits visual  
light, where the lamination layer is constructed of one unit or two  
or more units, and each unit is a laminated structure of a metal  
layer (e.g., Al, Al alloy) and an org. compd. layer, wherein the  
lamination layer is formed on the primary surface of the plastic  
substrate (e.g., polyether sulfone, polyallylate, polyimide,  
polyamide, acrylic resin, epoxy resin, polyethylene terephthalate,  
polyethylenenaphthalate and polycarbonate), so that a flexible  
substrate structure can be obtained while preventing the substrate  
from deterioration with the transmission of oxygen or moisture  
content.
- IT **172285-83-5**  
(blue luminescent layer; **light emitting**  
device having laminated structure on plastic substrate)
- RN 172285-83-5 HCA
- CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA  
INDEX NAME)



- IC ICM H01L035-24  
 NCL 257040000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 38, 76  
 ST **light emitting** device laminated structure  
 plastic substrate  
 IT Plastics, uses  
 (light emitting device having laminated structure on plastic substrate)  
 IT Acrylic polymers, uses  
 Epoxy resins, uses  
 Polyamides, uses  
 Polycarbonates, uses  
 Polyesters, uses  
 Polyimides, uses  
 (substrate; **light emitting** device having laminated structure on plastic substrate)  
 IT Aluminum alloy, base  
 (laminated structure; **light emitting** device having laminated structure on plastic substrate)  
 IT 5694-20-2D, Styryl amine, derivs. 65181-78-4, TPD 169224-61-7  
 172285-83-5  
 (blue luminescent layer; **light emitting** device having laminated structure on plastic substrate)  
 IT 2085-33-8, Alq3  
 (green luminescent layer; **light emitting** device having laminated structure on plastic substrate)

- IT 203007-32-3  
(hole injection layer; **light emitting** device  
having laminated structure on plastic substrate)
- IT 27070-49-1D, 1,2,3-Triazole, derivs.  
(hole transport layer; **light emitting** device  
having laminated structure on plastic substrate)
- IT 12033-89-5, Silicon nitride, uses  
(insulation layer; **light emitting** device  
having laminated structure on plastic substrate)
- IT 7429-90-5, Aluminum, uses  
(laminated structure; **light emitting** device  
having laminated structure on plastic substrate)
- IT 9020-73-9, Polyethylenenaphthalate 25038-59-9, Polyethylene  
terephthalate, uses 25667-42-9, Polyether sulfone  
(substrate; **light emitting** device having  
laminated structure on plastic substrate)
- L51 ANSWER 6 OF 22 HCA COPYRIGHT 2004 ACS on STN
- 140:84384 Azacyclic compounds for organic **electroluminescent**  
devices high luminescence efficiency and intensity and long service  
life. Yamamoto, Hiroshi; Matsuura, Masahide; Ikeda, Shuji; Kubota,  
Mineyuki; Kawamura, Masahiro (Idemitsu Kosan Co., Ltd., Japan).  
Jpn. Kokai Tokkyo Koho JP 2004002297 A2 20040108, 76 pp. X  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-4139 20030110.  
PRIORITY: JP 2002-108805 20020411.
- AB The compds. are HARLAR1Ar2 (HAR = C3-40 azacyclic group; L = single  
bond, C6-60 arylene, C3-60 heteroarylene, fluorenylene; Ar1 = C6-60  
arom. hydrocarbylene; Ar2 = C2-60 aryl, C3-60 heteroaryl). The  
devices include the compds. in emitter layers or electron-injection  
and/or electron-transport layers.
- IT **641144-06-1P**  
(azacyclic compds. for org. **electroluminescent** devices  
high luminescence efficiency and intensity and long service life)
- RN 641144-06-1 HCA
- CN Imidazo[1,2-a]pyridine, 2-[4'-[10-(2-naphthalenyl)-9-  
anthracenyl][1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)



- IC ICM C07D213-22  
ICS C07D215-04; C07D219-02; C07D239-26; C07D241-42; C07D253-06;  
C07D401-04; C07D471-04; C07D487-04; C09K011-06; H05B033-14;  
H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 28
- ST azacyclic emitter org **electroluminescent** device;  
naphthalenyl anthracenyl phenylpyridine electron injection  
**electroluminescent** device; electron transport azacyclic org  
**electroluminescent** device
- IT **Electroluminescent** devices  
Electron transport  
(azacyclic compds. for org. **electroluminescent** devices  
high luminescence efficiency and intensity and long service life)
- IT Luminescent substances  
(**electroluminescent**; azacyclic compds. for org.  
**electroluminescent** devices high luminescence efficiency  
and intensity and long service life)
- IT Alkali metal halides, uses  
Alkali metal oxides  
Alkali metals, uses  
Alkaline earth halides  
Alkaline earth metals  
Alkaline earth oxides

Rare earth halides

Rare earth metals, uses

Rare earth oxides

(reducing dopants in electron-injection and/or -transport layers;  
azacyclic compds. for org. **electroluminescent** devices  
high luminescence efficiency and intensity and long service life)

IT Alkali metal complexes

Alkaline earth complexes

Rare earth complexes

(with org. compds., reducing dopants in electron-injection and/or  
-transport layers; azacyclic compds. for org.

**electroluminescent** devices high luminescence efficiency  
and intensity and long service life)

IT	641143-78-4P	641143-79-5P	641143-80-8P	641143-81-9P
	641143-82-0P	641143-83-1P	641143-84-2P	641143-85-3P
	641143-86-4P	641143-87-5P	641143-88-6P	641143-89-7P
	641143-90-0P	641143-91-1P	641143-92-2P	641143-93-3P
	641143-94-4P	641143-95-5P	641143-96-6P	641143-97-7P
	641143-98-8P	641143-99-9P	641144-00-5P	641144-01-6P
	641144-02-7P	641144-03-8P	641144-04-9P	641144-05-0P
	641144-06-1P	641144-07-2P		

(azacyclic compds. for org. **electroluminescent** devices

high luminescence efficiency and intensity and long service life)

IT	888-61-9P	1023-01-4P, 2-(4-Bromophenyl)-6-methylimidazo[1,2-		
	a]pyridine	1774-66-9P	4044-98-8P	5021-45-4P 5731-01-1P
	19738-94-4P	31827-94-8P, 2-Bromo-4'-iodoacetophenone		
	34658-66-7P, 2-(4-Bromophenyl)imidazo[1,2-a]pyridine	38786-67-3P,		
	2,4'-Dibromopropiophenone	56921-85-8P	58536-46-2P	61001-06-7P
	64493-70-5P	73402-91-2P	94512-73-9P	118001-58-4P
	163087-23-8P	174005-84-6P	214958-27-7P	419557-33-8P
	641144-08-3P	641144-09-4P	641144-10-7P	641144-11-8P
	641144-12-9P	641144-13-0P	641144-14-1P	641144-15-2P
	641144-17-4P	641144-18-5P		

(azacyclic compds. for org. **electroluminescent** devices

high luminescence efficiency and intensity and long service life)

IT	70-11-1, Phenacyl bromide	92-66-0, 4-Bromobiphenyl	95-54-5,
	1,2-Phenylenediamine, reactions	98-80-6, Phenylboronic acid	
	98-86-2, Acetophenone, reactions	99-73-0, 2,4'-Dibromoacetophenone	
	99-90-1	109-12-6, 2-Aminopyrimidine	128-08-5, N-Bromosuccinimide
	504-29-0, 2-Aminopyridine	613-94-5, Benzoylhydrazine	642-31-9,
	9-Formylanthracene	695-34-1, 2-Amino-4-picoline	838-32-4
	941-98-0, 1-Acetylnaphthalene	1072-97-5, 2-Amino-5-bromopyridine	
	1122-62-9, 2-Acetylpyridine	1122-91-4, 4-Bromobenzaldehyde	
	1207-69-8, 9-Chloroacridine	1532-84-9, 1-Aminoisoquinoline	
	1603-40-3, 2-Amino-3-picoline	1603-41-4, 2-Amino-5-picoline	
	1670-14-0, Benamidine hydrochloride	2142-63-4,	
	3'-Bromoacetophenone	2835-77-0, 2-Aminobenzophenone	10342-83-3,
	4'-Bromopropiophenone	13329-40-3, 4'-Iodoacetophenone	

13780-71-7, Boronic acid 13922-41-3, 1-Naphthaleneboronic acid  
32316-92-0, 2-Naphthaleneboronic acid 68572-87-2,  
9-Phenanthreneboronic acid 94255-63-7 100622-34-2,  
9-Anthraceneboronic acid 128143-89-5, 4'-Chloro-[2,2';  
6',2'']terpyridine 128388-54-5 334658-75-2 359012-63-8  
400607-46-7 400607-48-9 597554-03-5 641144-16-3  
(azacyclic compds. for org. **electroluminescent** devices  
high luminescence efficiency and intensity and long service life)

L51 ANSWER 7 OF 22 HCA COPYRIGHT 2004 ACS on STN  
139:330127 Novel aromatic compound for organic  
**electroluminescent** device. Ikeda, Hidetsugu; Matsuura,  
Masahide; Funahashi, Masakazu; Hosokawa, Chishio (Idemitsu Kosan  
Co., Ltd., Japan). PCT Int. Appl. WO 2003087023 A1 20031023, 69 pp.  
DESIGNATED STATES: W: CN, IN, KR, US; RW: AT, BE, CH, CY, DE, DK,  
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese).  
CODEN: PIXXD2. APPLICATION: WO 2003-JP4905 20030417. PRIORITY: JP  
2002-114400 20020417.

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\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB The invention refers to a novel arom. compd. comprising a anthracene  
skeleton and an asym. mol. structure A-Ar-B [Ar = (un)substituted  
anthracenediyl; B = alkenyl- or arylamine-monosubstituted C2-60  
heterocycle or (un)substituted C5-60 aryl; A = I, II, III, IV, V,  
VI, VII, VIII, IX, X, IX; Ar1-3 = (un)substituted C6-30 aryl; Ar4 =  
(un)substituted C6-30 arylene; Ar5 = (un)substituted C6-30 trivalent  
arom.; R1,2 - H, halo, hydroxyl, (un)substituted amino, nitro cyano  
(un)substituted C1-30 alkyl, C2-40 alkenyl, C5-40 cycloalkyl, C1-30  
alkoxy, C5-40 arom. hydrocarbon, C2-40 arom. heterocycle, C7-40  
aralkyl, C6-40 aryloxy, C2-30 silyl or carboxyl; Ar1,2 and R1,2 may  
each join together to form rings].

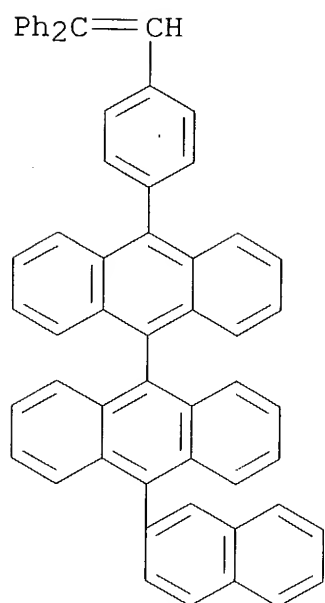
IT 614734-92-8 614734-93-9

(novel arom. compd. for org. **electroluminescent** device)

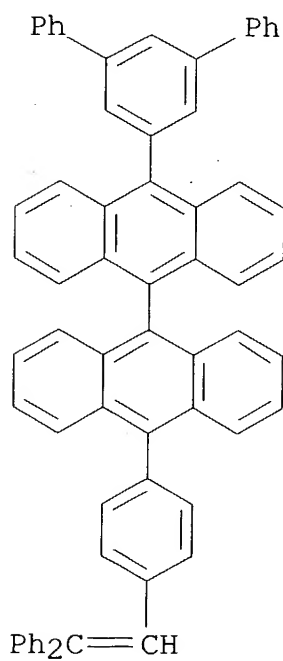
RN 614734-92-8 HCA

CN 9,9'-Bianthracene, 10-[4-(2,2-diphenylethenyl)phenyl]-10'-(2-  
naphthalenyl)- (9CI) (CA INDEX NAME)





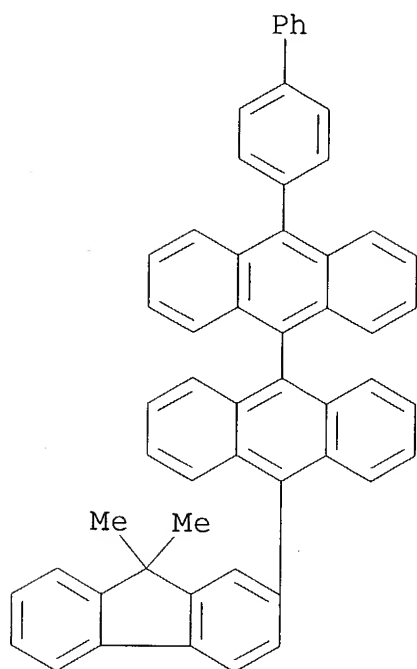
RN 614734-93-9 HCA

CN 9,9'-Bianthracene, 10-[4-(2,2-diphenylethenyl)phenyl]-10'-  
[1,1':3',1''-terphenyl]-5'-yl- (9CI) (CA INDEX NAME)

IC ICM C07C015-60

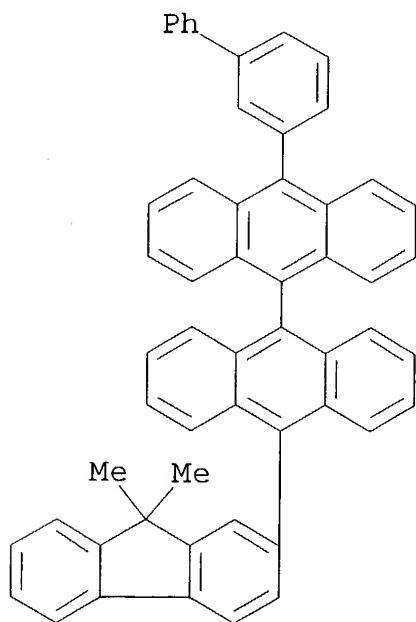
- ICS C07C013-66; C07C013-567; C07C211-54; C07D209-86; C07D215-04;  
C09K011-06; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25
- ST **electroluminescent** device anthracene deriv
- IT **Electroluminescent** devices  
(novel arom. compd. for org. **electroluminescent** device)
- IT Aromatic hydrocarbons, uses  
(novel arom. compd. for org. **electroluminescent** device)
- IT 614734-91-7 **614734-92-8 614734-93-9**  
(novel arom. compd. for org. **electroluminescent** device)
- IT 614734-94-0P 614734-96-2P 614735-00-1P 614735-04-5P  
614735-06-7P 614735-09-0P 614735-11-4P  
(novel arom. compd. for org. **electroluminescent** device)
- IT 98-80-6, Phenyl boronic acid 122-39-4, Diphenylamine, reactions  
128-08-5, N-Bromosuccinimide 1564-64-3, 9-Bromoanthracene  
5122-94-1, 4-Biphenyl boronic acid 22362-86-3, 9-Iodoanthracene  
32316-92-0, 2-Naphthalene boronic acid 63503-60-6, 3-Chlorophenyl  
boronic acid 117695-55-3 151169-75-4, 3,4-Dichlorophenylboronic  
acid 400607-12-7 474688-73-8 614734-95-1 614735-08-9  
614735-10-3  
(novel arom. compd. for org. **electroluminescent** device)
- IT 7424-72-8P, 9-(2-Naphthyl) anthracene 23674-16-0P 158902-12-6P  
349666-30-4P 474688-74-9P 478495-51-1P 614734-97-3P  
614734-98-4P 614734-99-5P 614735-01-2P 614735-02-3P  
614735-03-4P 614735-05-6P  
(novel arom. compd. for org. **electroluminescent** device)
- IT 614735-07-8P  
(novel arom. compd. for org. **electroluminescent** device)
- L51 ANSWER 8 OF 22 HCA COPYRIGHT 2004 ACS on STN
- 139:171119 Organic **electroluminescent** device comprising  
coupled anthracene fluorene derivative and with amino-substituted  
hydrocarbon. Totani, Yoshiyuki; Ishida, Tsutomu; Shimamura,  
Takehiko; Tanabe, Yoshimitsu; Nakatsuka, Masakatsu (Mitsui Chemicals  
Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2003229273 A2 20030815, 122  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-25736  
20020201.
- AB The invention refers to an org. **electroluminescent** device  
comprising one or two fluorene rings directed bonded to an  
anthracene and a amino-substituted hydrocarbon.
- IT **400606-21-5 577795-82-5**  
(org. **electroluminescent** device comprising coupled  
anthracene fluorene deriv. and with amino-substituted  
hydrocarbon)
- RN 400606-21-5 HCA
- CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-4-yl-10'-(9,9-dimethyl-9H-

fluoren-2-yl)-(9CI) (CA INDEX NAME)



RN 577795-82-5 HCA

CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-3-yl-10'-(9,9-dimethyl-9H-fluoren-2-yl)-(9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
ICS C09K011-06; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST **electroluminescent** device anthracene fluorene
- IT **Electroluminescent** devices  
(org. **electroluminescent** device comprising coupled anthracene fluorene deriv. and with amino-substituted hydrocarbon)
- IT 400605-92-7 400605-99-4 400606-62-4 400606-71-5 400606-72-6  
400606-81-7 577795-75-6 577795-76-7 577795-77-8 577795-78-9  
577795-79-0 577795-80-3 577795-81-4  
(compds. with fluorenes; org. **electroluminescent** device comprising coupled anthracene fluorene deriv. and with amino-substituted hydrocarbon)
- IT 96773-85-2 144810-07-1 150220-33-0 150220-36-3 150973-91-4  
177799-14-3 177799-15-4 177799-16-5 189263-89-6 189263-91-0  
194295-85-7 194295-98-2 194296-12-3 194296-19-0  
**400606-21-5** 400606-86-2 400606-87-3 522615-57-2  
**577795-82-5** 577795-83-6 577795-84-7 577795-85-8  
577795-86-9 577795-87-0 577795-88-1  
(org. **electroluminescent** device comprising coupled anthracene fluorene deriv. and with amino-substituted hydrocarbon)
- L51 ANSWER 9 OF 22 HCA COPYRIGHT 2004 ACS on STN
- 137:377245 Organic **electroluminescent** device containing aromatic condensed ring compound. Suzuki, Koichi; Senoo, Akihiro; Tanabe, Hiroshi (Canon Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2002329580 A2 20021115, 50 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-36804 20020214. PRIORITY: JP 2001-46225 20010222.
- AB The **electroluminescent** device has  $\geq 1$  org. layer contg. arom. condensed ring compd. a benzene substituted with R1-4 and Ar1-2 (I), a benzene substituted with R5-7 and Ar3-5 (II), or a benzene substituted with R8-9 and Ar6-9 (III) [R1-R9 = H, alkyl, (substituted)aralkyl, (substituted)aryl, (substituted)heterocycle, (substituted)amino, cyano; Ar1-Ar9 = (substituted)arom. condensed ring, (substituted)condensed heterocycle, optionally linked via phenylene], preferably claimed compds. II (R5-R7 = H, Ar3-Ar5 = LH at 1,3,5-positions, L = 9,9-dimethylfluorene-2,7-diyl), II (R5-R7 = H, Ar3-Ar5 = L2H at 1,3,5-positions), III (R8 = R9 = H, Ar6-Ar9 = LH at 1,2,4,5-positions), or III (R8 = R9 = H, Ar6-Ar9 = L2H at 1,2,4,5-positions), as electron-transporting or **light-emitting** layers between a cathode and an anode. The org. layer in the device is useful as an electron-transporting layer, an emitting layer, and a hole/exciton-blocking layer and the device

shows high emission, low driving voltage, and improved durability.

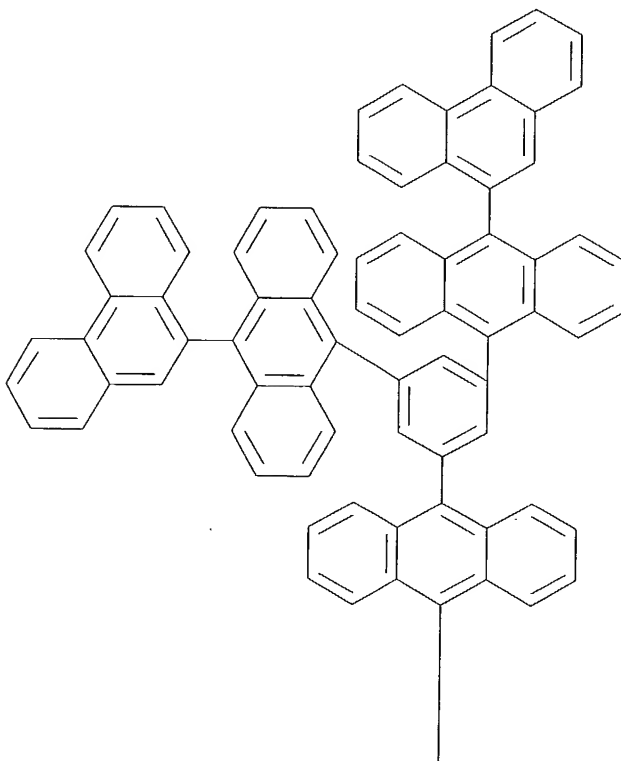
IT 475461-00-8

(org. **electroluminescent** device contg. arom. condensed ring compd. as electron-transporting or **light-emitting** or hole/exciton-blocking layer)

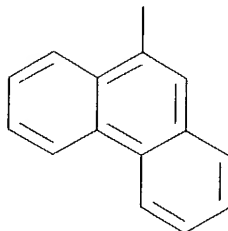
RN 475461-00-8 HCA

CN Anthracene, 9,9',9''-(1,3,5-benzenetriyl)tris[10-(9-phenanthrenyl)-  
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-14  
ICS C07C013-547; C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25

ST **electroluminescent** device arom condensed ring electron transporter; **light emitting** layer condensed ring compd **EL** device; hole exciton blocking layer condensed ring **EL** device

IT **Electroluminescent** devices  
(org. **electroluminescent** device contg. arom. condensed ring compd. as electron-transporting or **light-emitting** or hole/exciton-blocking layer)

IT	111228-18-3	151965-47-8	349666-25-7	349666-25-7	349666-26-8
	475460-76-5	475460-77-6	475460-78-7	475460-79-8	475460-80-1
	475460-81-2	475460-82-3	475460-84-5	475460-85-6	475460-86-7
	475460-87-8	475460-88-9	475460-89-0	475460-90-3	475460-91-4
	475460-92-5	475460-93-6	475460-95-8	475460-96-9	475460-97-0
	475460-98-1	475460-99-2	<b>475461-00-8</b>	475461-01-9	
	475461-02-0	475461-03-1	475461-04-2	475461-05-3	475461-06-4
	475461-07-5	475461-08-6	475461-09-7	475461-10-0	475461-11-1
	475461-12-2	475461-13-3	475461-14-4	475461-15-5	475461-16-6
	475461-17-7	475461-18-8	475461-19-9	475461-20-2	475461-21-3
	475461-22-4	475461-23-5	475461-24-6	475461-25-7	475461-26-8
	475461-27-9	475461-28-0	475461-29-1	475461-30-4	475461-31-5
	475461-32-6	475461-33-7	475461-34-8		

(org. **electroluminescent** device contg. arom. condensed ring compd. as electron-transporting or **light-emitting** or hole/exciton-blocking layer)

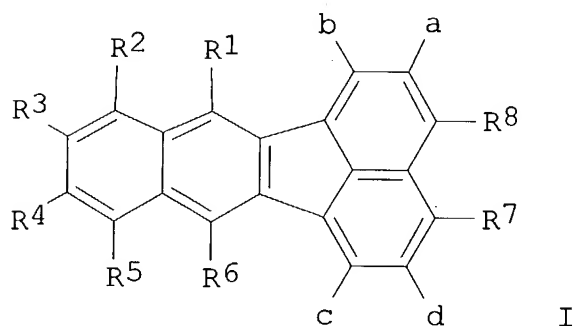
IT 441352-90-5P 475461-35-9P 475461-36-0P 475461-37-1P  
(org. **electroluminescent** device contg. arom. condensed ring compd. as electron-transporting or **light-emitting** or hole/exciton-blocking layer)

IT 626-39-1, 1,3,5-Tribromobenzene 636-28-2, 1,2,4,5-Tetrabromobenzene 333432-28-3 400607-34-3  
(org. **electroluminescent** device contg. arom. condensed ring compd. as electron-transporting or **light-**

emitting or hole/exciton-blocking layer)

L51 ANSWER 10 OF 22 HCA COPYRIGHT 2004 ACS on STN  
 137:343711 Organic **EL** element and compound having  
 benzofluoranthene derivatives used therein. Fujita, Tetsuji;  
 Kitagawa, Sumiko; Inoue, Tetsushi (TDK Corporation, Japan). PCT  
 Int. Appl. WO 2002085822 A1 20021031, 331 pp. DESIGNATED STATES: W:  
 CN, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,  
 MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO  
 2002-JP3925 20020419. PRIORITY: JP 2001-121788 20010419.

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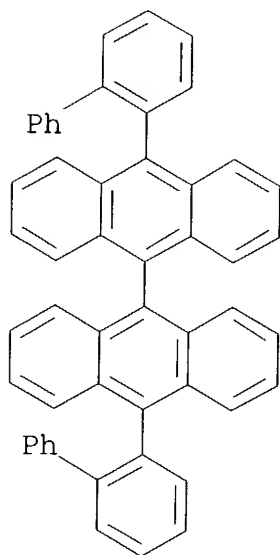
AB Title compd. is represented by a general formula  $X_nY$  [  $X = I$ ;  $Y =$  a single bond or (un)substituted aryl or heterocyclic linkage;  $n = 2$  or 3;  $R1-8, a - d = H, alkyl, (un)substituted aryl, allyl, heterocyclyl, or arylamino, or amino$ ]. The compd. offers an excellent durability and an excellent color purity with great satisfactory luminescent performance.

IT 172285-83-5P

(electroluminescent devices having benzofluoranthene derivs.)

RN 172285-83-5 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)



- IC ICM C07C013-62  
ICS C07C211-54; C07C211-61; C09K011-06; C07D213-06; C07D333-08;  
C07D333-76; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 24, 76
- ST benzofluoranthene deriv **electroluminescent** device
- IT **Electroluminescent** devices  
(benzofluoranthene derivs. of)
- IT 2085-33-8P **172285-83-5P** 175606-05-0P 474266-91-6P  
474266-92-7P 474266-93-8P 474266-94-9P  
(**electroluminescent** devices having benzofluoranthene  
derivs.)
- IT 5471-63-6P 7267-03-0P 81090-53-1P 187086-32-4P 276249-59-3P  
(**electroluminescent** devices having benzofluoranthene  
derivs.)
- IT 203007-32-3P  
(hole injection layer; **electroluminescent** devices  
having benzofluoranthene derivs.)
- IT 169224-61-7P  
(hole transporting layer; **electroluminescent** devices  
having benzofluoranthene derivs.)
- IT 16391-62-1P 216066-60-3P 249288-65-1P 272459-50-4P  
368884-55-3P  
(**light emitting** layer;  
**electroluminescent** devices having benzofluoranthene  
derivs.)



L51 ANSWER 11 OF 22 HCA COPYRIGHT 2004 ACS on STN

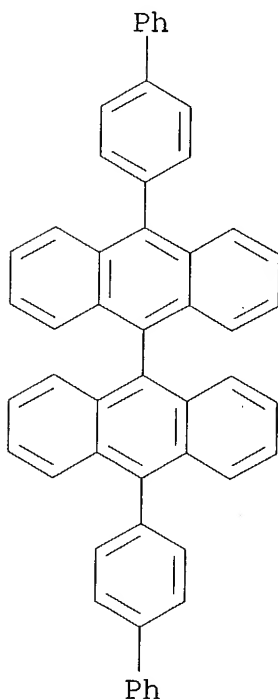
136:393082 Organic **electroluminescent** device with bis-anthracene. Sakai, Toshio; Fukuoka, Kenichi; Tokairin, Hiroshi; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2002043448 A1 20020530, 26 pp. DESIGNATED STATES: W: CN, IN, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP10273 20011126. PRIORITY: JP 2000-359177 20001127.

AB The invention refers to an org. **electroluminescent** device comprising an org. compd. layer with a **light-emitting** material and a bis-(condensed arom.) in order to suppress crystn. even under prolonged operation and high temps., and enhance durability.

IT 172285-79-9  
(org. **electroluminescence** device)

RN 172285-79-9 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent** device bis anthracene

IT **Electroluminescent** devices

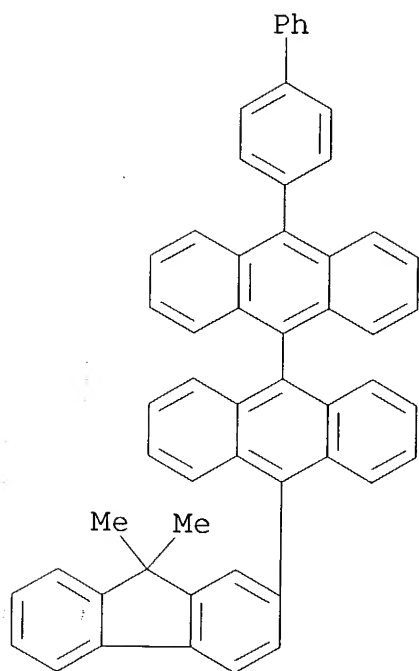
(org. electroluminescence device)  
IT 23102-67-2 172285-72-2 172285-79-9  
(org. electroluminescence device)

L51 ANSWER 12 OF 22 HCA COPYRIGHT 2004 ACS on STN  
136:191499 Hydrocarbon compound for organic electroluminescent  
elements and using them. Ishida, Tsutomu; Shimamura, Takehiko;  
Totani, Yoshiyuki; Nakatsuka, Masakatsu (Mitsui Chemicals, Inc.,  
Japan). PCT Int. Appl. WO 2002014244 A1 20020221, 251 pp.  
DESIGNATED STATES: W: KR, US; RW: DE, FR, NL. (Japanese). CODEN:  
PIXXD2. APPLICATION: WO 2001-JP6920 20010810. PRIORITY: JP  
2000-242476 20000810; JP 2000-268568 20000905.

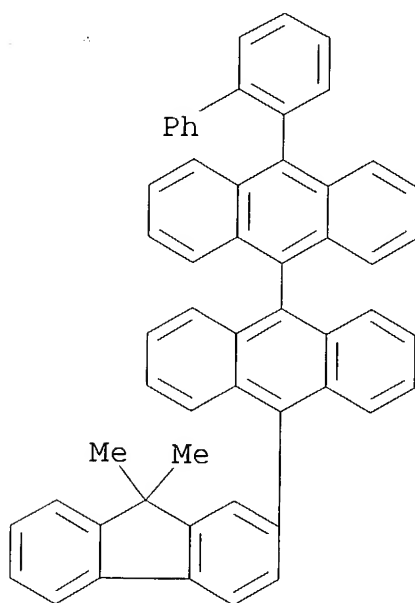
AB Title electroluminescent elements comprise one pair of  
electrodes and pinched between the electrodes,  $\geq 1$  layer(s)  
contg.  $\geq 1$  novel hydrocarbon compd. in a general formula  
 $X1(F1)j(A1)k(F2)l(A2)m(F3)nX2$  [ $A1-2 =$  (un)substituted  
anthracenediyl;  $F1-3 =$  (un)substituted fluorenediyl;  $X1-2 =$  H, halo,  
straight, branched or cyclic alkyl, alkoxy, amino, aryl, or  
(un)substituted amino, aryl or aralkyl,  $j,m,n = 0, 1$ ;  $k,l = 1, 2$ ]  
having an anthracene ring and a fluorene ring which are directly  
bonded with each other. The compd. can be suitably used for prepg.  
an org. electroluminescent element being excellent in  
luminous efficiency and having a long luminous life.

IT 400606-21-5 400606-22-6 400606-24-8  
400606-45-3 400606-47-5 400606-57-7  
(prepn. of hydrocarbon compd. for org. electroluminescent  
devices)

RN 400606-21-5 HCA  
CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-4-yl-10'-(9,9-dimethyl-9H-  
fluoren-2-yl)- (9CI) (CA INDEX NAME)

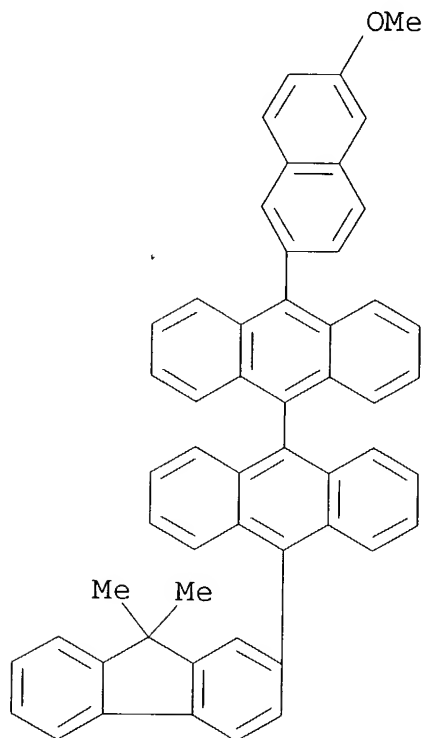


RN 400606-22-6 HCA  
CN 9,9'-Bianthrane, 10-[1,1'-biphenyl]-2-yl-10'-(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



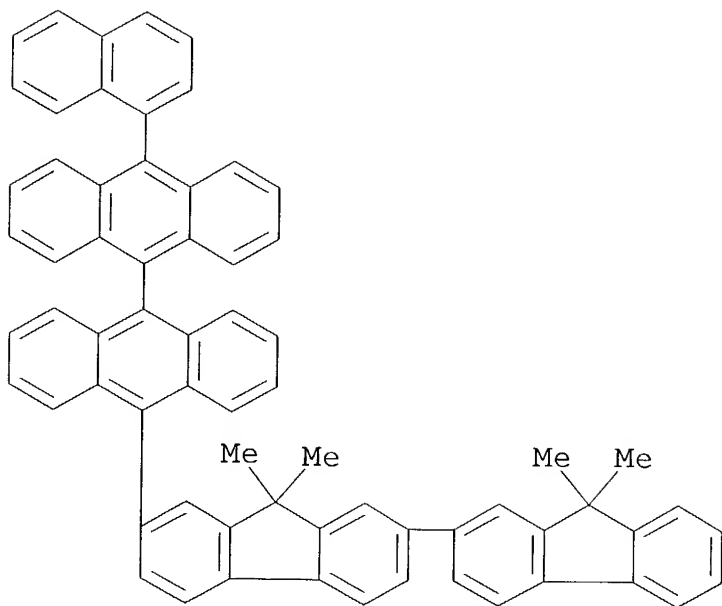
RN 400606-24-8 HCA

CN 9,9'-Bianthracene, 10-(9,9-dimethyl-9H-fluoren-2-yl)-10'-(6-methoxy-2-naphthalenyl)- (9CI) (CA INDEX NAME)

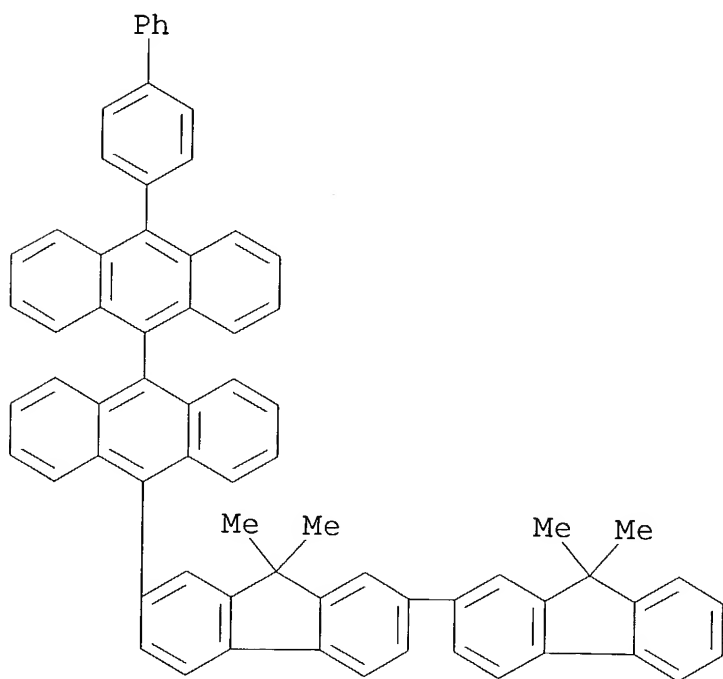


RN 400606-45-3 HCA

CN 9,9'-Bianthracene, 10-(1-naphthalenyl)-10'-(9,9,9',9'-tetramethyl[2,2'-bi-9H-fluoren]-7-yl)- (9CI) (CA INDEX NAME)

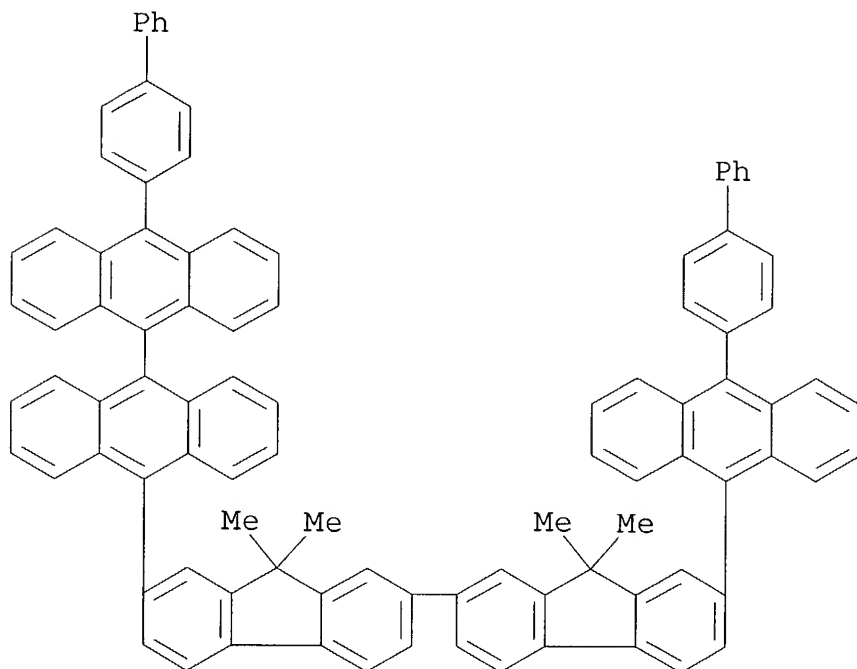


RN 400606-47-5 HCA  
CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-4-yl-10'-(9,9,9',9'-  
tetramethyl[2,2'-bi-9H-fluoren]-7-yl)-(9CI) (CA INDEX NAME)



RN 400606-57-7 HCA

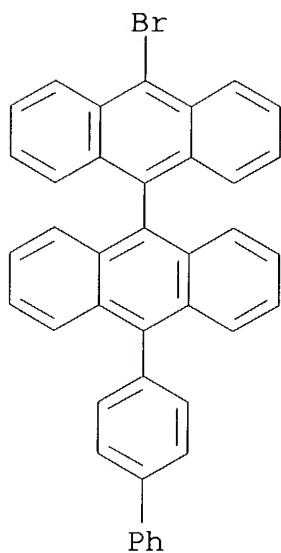
CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-4-yl-10'-[7'-(10-[1,1'-biphenyl]-4-yl-9-anthracenyl)-9,9,9',9'-tetramethyl[2,2'-bi-9H-fluoren]-7-yl]- (9CI) (CA INDEX NAME)



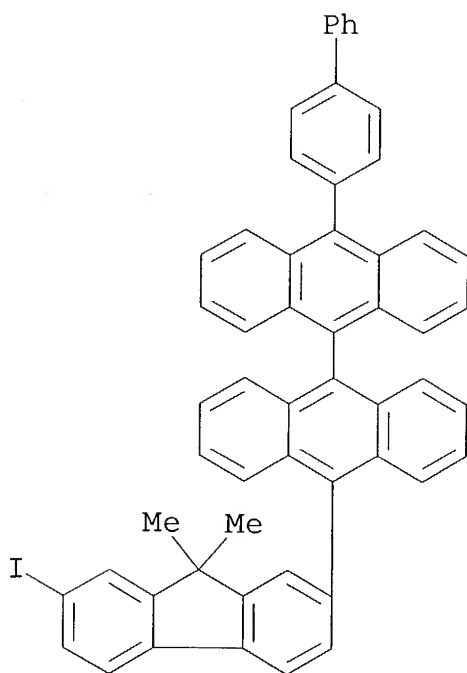
IT 400607-66-1 400607-72-9  
(prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

RN 400607-66-1 HCA

CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-4-yl-10'-bromo- (9CI) (CA INDEX NAME)



RN 400607-72-9 HCA  
CN 9,9'-Bianthrane, 10-[1,1'-biphenyl]-4-yl-10'-(7-iodo-9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



IC ICM C07C013-58  
ICS C07C025-22; C07C043-235; C07C211-53; C07C211-61; C09K011-06;

C07D213-16; C07D333-18; C07D215-04; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 24, 74

ST anthracene fluorene **electroluminescent** device

IT **Electroluminescent** devices  
(prepn. of hydrocarbon compd. contg. anthracene and fluorene for)

IT Fluorescent substances  
(prepn. of hydrocarbon compd. contg. anthracene and fluorene for **EL** devices)

IT Hydrocarbons, uses  
(prepn. of hydrocarbon compd. contg. anthracene and fluorene for **EL** devices)

IT 2085-33-8  
(electron injection/transport layer; prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT 38215-36-0  
(green **light-emitting** component; prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT 65181-78-4 124729-98-2  
(hole injection/transport layer; prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT 24601-13-6 146162-48-3 146162-54-1  
(**light-emitting** layer contg.; prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT 51325-91-8, DCM 1  
(orange **light-emitting** component; prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT 14221-01-3, Tetrakis(triphenylphosphine)palladium 25067-59-8  
138372-67-5 150405-69-9  
(prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT 400605-76-7 400605-78-9 400605-79-0 400605-81-4 400605-82-5  
400605-84-7 400605-85-8 400605-87-0 400605-88-1 400605-90-5  
400605-92-7 400605-94-9 400605-96-1 400605-97-2 400605-99-4  
400606-00-0 400606-02-2 400606-03-3 400606-04-4 400606-06-6  
400606-07-7 400606-08-8 400606-09-9 400606-10-2 400606-11-3  
400606-12-4 400606-14-6 400606-15-7 400606-17-9 400606-18-0  
400606-19-1 400606-20-4 **400606-21-5 400606-22-6**  
400606-23-7 **400606-24-8** 400606-26-0 400606-28-2  
400606-30-6 400606-32-8 400606-34-0 400606-35-1 400606-37-3  
400606-39-5 400606-41-9 400606-43-1 **400606-45-3**  
**400606-47-5** 400606-48-6 400606-49-7 400606-50-0  
400606-51-1 400606-52-2 400606-53-3 400606-54-4 400606-55-5  
400606-56-6 **400606-57-7** 400606-58-8 400606-59-9  
400606-60-2 400606-61-3 400606-62-4 400606-63-5 400606-64-6  
400606-65-7 400606-66-8 400606-67-9 400606-68-0 400606-69-1  
400606-70-4 400606-71-5 400606-72-6 400606-73-7 400606-74-8



400606-75-9	400606-76-0	400606-77-1	400606-78-2	400606-79-3
400606-80-6	400606-81-7	400606-82-8	400606-83-9	400606-84-0
400606-85-1	400606-86-2	400606-87-3	400606-88-4	400606-89-5
400606-90-8	400606-91-9	400606-92-0	400606-93-1	400606-94-2
400606-95-3	400606-96-4	400606-97-5	400606-98-6	

(prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

IT	523-27-3	23673-92-9	23674-20-6	121848-75-7	144981-86-2
	144981-88-4	145005-98-7	158902-11-5	278176-05-9	333432-28-3
	334658-75-2	371193-08-7	400606-99-7	400607-00-3	400607-01-4
	400607-02-5	400607-03-6	400607-04-7	400607-05-8	400607-06-9
	400607-07-0	400607-08-1	400607-09-2	400607-10-5	400607-11-6
	400607-12-7	400607-13-8	400607-14-9	400607-15-0	400607-16-1
	400607-17-2	400607-18-3	400607-19-4	400607-20-7	400607-21-8
	400607-22-9	400607-23-0	400607-24-1	400607-25-2	400607-26-3
	400607-27-4	400607-28-5	400607-29-6	400607-30-9	400607-31-0
	400607-32-1	400607-33-2	400607-34-3	400607-35-4	400607-36-5
	400607-37-6	400607-38-7	400607-39-8	400607-40-1	400607-41-2
	400607-42-3	400607-43-4	400607-44-5	400607-45-6	400607-46-7
	400607-47-8	400607-48-9	400607-49-0	400607-50-3	400607-51-4
	400607-52-5	400607-53-6	400607-54-7	400607-55-8	400607-56-9
	400607-57-0	400607-58-1	400607-59-2	400607-60-5	400607-61-6
	400607-62-7	400607-63-8	400607-64-9	400607-65-0	
	<b>400607-66-1</b>	400607-67-2	400607-68-3	400607-69-4	
	400607-70-7	400607-71-8	<b>400607-72-9</b>	400607-73-0	
	400607-74-1	400607-75-2	400607-76-3	400607-77-4	400607-78-5
	400607-79-6	400607-80-9	400607-81-0		

(prepn. of hydrocarbon compd. for org. **electroluminescent** devices)

L51 ANSWER 13 OF 22 HCA COPYRIGHT 2004 ACS on STN

135:296018 Organic **electroluminescence** device and organic luminescent medium. Fukuoka, Kenichi; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2001076323 A1 20011011, 60 pp. DESIGNATED STATES: W: CN, IN, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP2587 20010328. PRIORITY: JP 2000-93976 20000330.

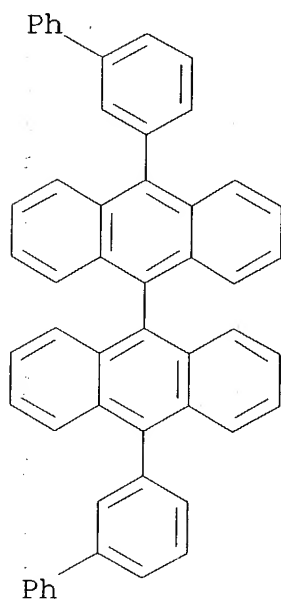
AB The invention relates to an org. **electroluminescence** device having a pair of electrodes and an **org. luminescent** medium layer held between them, wherein the **org. luminescent** medium layer at least contains an electron-transporting compd. and an anthracene deriv. of a specific structure, and has excellent heat resistance, long life, and the efficiency of luminescence is high. An **org. luminescent** medium preferably used for such an **electroluminescence** device is also disclosed.

IT 172285-82-4

(org. electroluminescence device having org.  
luminescent medium layer of)

RN 172285-82-4 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-3-yl)- (9CI) (CA  
INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

ST Org electroluminescence device anthracene deriv

IT Electroluminescent devices

(org.; luminescent medium layer of)

IT 2085-33-8, Alq3 14642-34-3 23102-67-2 122648-99-1

172285-72-2 172285-82-4 186412-15-7 249512-71-8

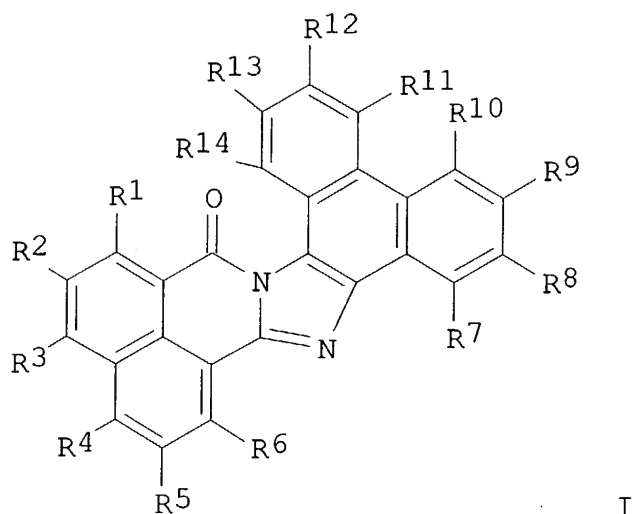
331856-47-4 364765-14-0 364765-16-2 364765-18-4

(org. electroluminescence device having org.  
luminescent medium layer of)

L51 ANSWER 14 OF 22 HCA COPYRIGHT 2004 ACS on STN

135:187523 Organic electroluminescent device. Kitazawa,  
Daisuke; Tominaga, Takeshi; Kohama, Toru (Toray Industries, Inc.,  
Japan). Jpn. Kokai Tokkyo Koho JP 2001223082 A2 20010817, 20 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-30373 20000208.

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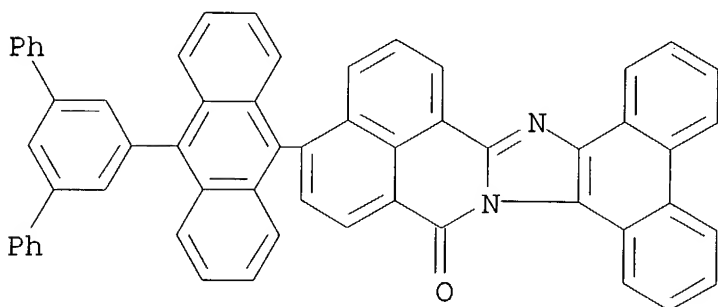
AB The invention relates to an org. **electroluminescent** device comprising the compd. represented by I [R1-R14 = H, alkyl, cycloalkyl, etc.; at least one of R3 and R4 have steric hindrance to limit the free internal rotation] and a 580-720 nm emitting fluorescent material having a pyrromethane skeleton.

IT **355004-77-2**

(org. **electroluminescent** device)

RN 355004-77-2 HCA

CN 10H-Benzo[de]phenanthro[9',10':4,5]imidazo[2,1-a]isoquinolin-10-one, 13-(10-[1,1':3',1''-terphenyl]-5'-yl-9-anthracenyl)-(9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; G09F009-30

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org **electroluminescent** device perinone deriv pyrromethane

IT **Electroluminescent** devices

Steric hindrance

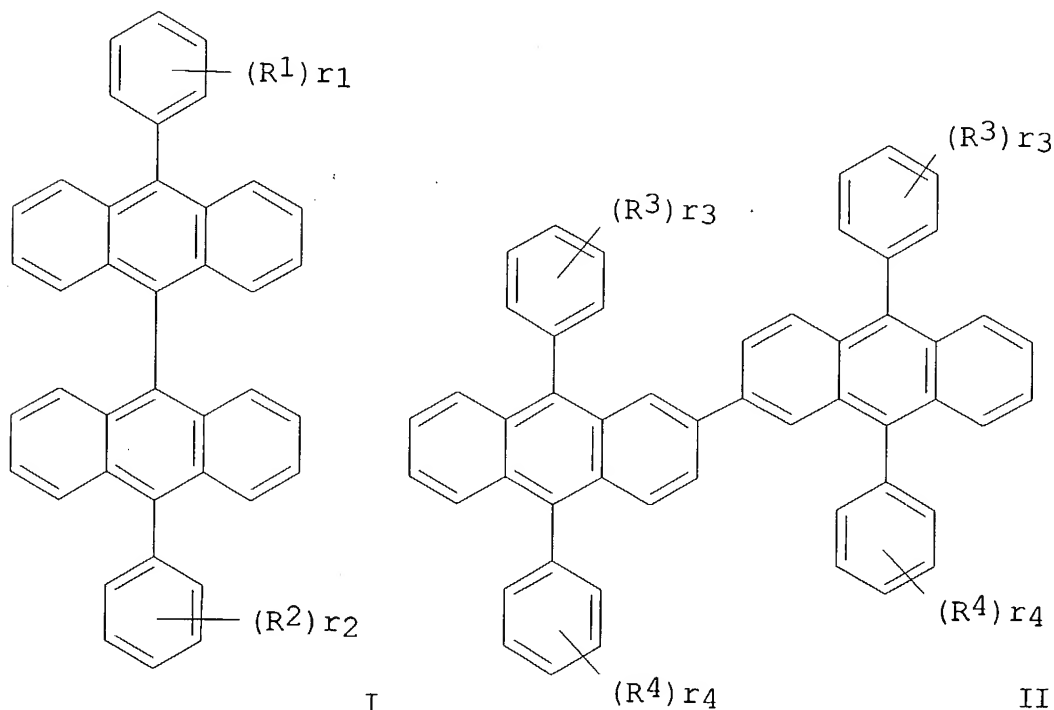
(org. **electroluminescent** device)

IT 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline  
 7439-93-2, Lithium, uses 7440-22-4, Silver, uses 20466-00-6  
 50926-11-9, ITO 65181-78-4, TPD 148185-56-2 152072-95-2  
 152072-98-5 152111-68-7 154793-50-7 168021-27-0 355004-68-1  
 355004-70-5 355004-73-8 **355004-77-2** 355004-80-7  
 355004-81-8 355015-23-5 355015-24-6  
 (org. **electroluminescent** device)

L51 ANSWER 15 OF 22 HCA COPYRIGHT 2004 ACS on STN

135:129391 Organic **electroluminescent** device. Ara, Kensuke;  
 Fujita, Tetsushi; Saito, Shinrou; Aotani, Atsushi; Inoue, Tetsushi  
 (TDK Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2001196179 A2  
 20010719, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 2000-2697 20000111.

GI



AB The invention relates to a blue-emitting org.  
**electroluminescent** device comprising the mixed org. layer

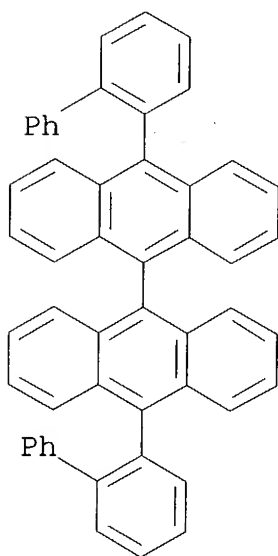
contg. more than one each of phenylanthracene derivs. represented by I and II [R1, R2, R3, and R4 = alkyl, cycloalkyl, aryl, etc.; r1, r2, r3, and r4 = 0-5 integers].

IT 172285-83-5

(org. **electroluminescent** device)

RN 172285-83-5 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST org **electroluminescent** device phenylanthracene

IT **Electroluminescent** devices

(org. **electroluminescent** device)

IT 28802-91-7D, Phenylanthracene, derivs. 50926-11-9, ITO

123847-85-8 172285-83-5 312497-16-8

(org. **electroluminescent** device)

L51 ANSWER 16 OF 22 HCA COPYRIGHT 2004 ACS on STN

134:273305 Organic **electroluminescence** and organic luminous medium. Hosokawa, Chishio; Higashi, Hisahiro; Fukuoka, Kenichi; Ikeda, Hidetsugu (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2001021729 A1 20010329, 41 pp. DESIGNATED STATES: W: CN, IN, JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2000-JP6402 20000920. PRIORITY: JP 1999-267460 19990921.

AB The invention refers to a org. **electroluminescent** device

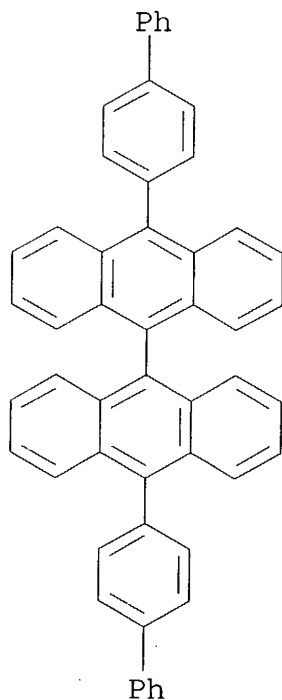
comprising a mono-, di- or tri- styryl amine, and at least one of the anthracene derivs., A1LA1 [A1,2 = (un)substituted mono Ph anthryl, or (un)substituted di-Ph anthryl; L = single bond or divalent chain] and A3AnA4 [An = (un)substituted anthracene; A3,4 = (un)substituted condensed arom. ring, or (un)substituted C12+ chain uncondensed aryl ring].

IT 172285-79-9

(org. electroluminescence and org.  
luminous medium)

RN 172285-79-9 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA  
INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST electroluminescent device anthracene

IT Electroluminescent devices

(org. electroluminescence and org.  
luminous medium)

IT	55035-42-2	55035-43-3	119564-21-5	122648-99-1	167022-38-0
	172285-76-6	172285-79-9	205930-46-7	209980-47-2	
	219785-99-6	221453-32-3	221453-38-9	229479-60-1	279672-57-0
	331749-28-1	331749-29-2	331749-30-5	331749-31-6	331749-32-7

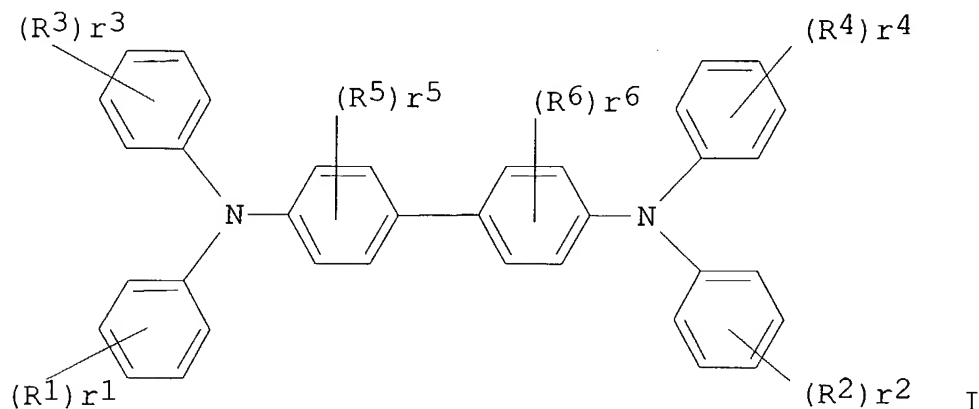
331749-33-8 331749-34-9 331749-35-0

(org. electroluminescence and org.  
luminous medium)

L51 ANSWER 17 OF 22 HCA COPYRIGHT 2004 ACS on STN

134:200267 Organic **electroluminescent** devices. Kobori, Isamu;  
Inoue, Tetsuji; Fujita, Tetsuji; Nakaya, Kenji (TDK Electronics Co.,  
Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001052870 A2 20010223, 49  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-345071  
19991203. PRIORITY: JP 1999-157176 19990603.

GI



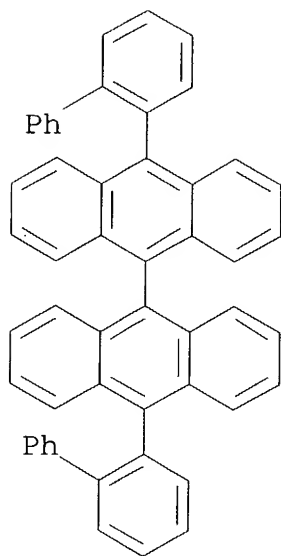
AB The devices, **emitting** a blue light, comprise a  
phosphor comprising a phenyl-anthracene deriv. I (R1-4 = aryl, alkyl,  
alkoxy, aryloxy, halo; r1-4 = 0-5; r5-6 = 0-4).

IT 172285-83-5

(org. **electroluminescent** devices)

RN 172285-83-5 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA  
INDEX NAME)



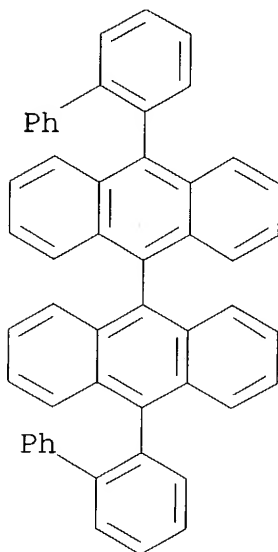
- IC ICM H05B033-14  
ICS C09K011-06; H05B033-12; H05B033-22; H05B033-26
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST org **electroluminescent** phenylanthracene phosphor device
- IT **Electroluminescent** devices  
(org. **electroluminescent** devices)
- IT 7429-90-5, Aluminum, uses 25583-20-4, Titanium nitride (TiN)  
37271-44-6 50926-11-9, ITO 123847-85-8, N,N'-Di(1-naphthyl)-N,N'-  
diphenyl benzidine 154853-81-3 169224-61-7 **172285-83-5**  
203007-32-3 216066-60-3  
(org. **electroluminescent** devices)
- L51 ANSWER 18 OF 22 HCA COPYRIGHT 2004 ACS on STN
- 134:34919 Phenylanthracene derivatives for **electroluminescent** devices and the devices. Inoue, Tetsuji; Fujita, Tetsuji; Ara, Kensuke (TDK Electronics Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000344691 A2 20001212, 33 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-157105 19990603.
- AB Phenylanthracene derivs. A1LA2 (I; A1, A2 = mono(o-substituted phenyl)anthryl, di(o-substituted phenyl)anthryl; L = direct bond, bivalent bonding group) are claimed. Markush structures for I are also given. Org. **electroluminescent** devices having an org. layer contg. I are also claimed. The devices are suitable for use as blue **light-emitting** materials and as charge injection materials.
- IT **172285-83-5P**  
(**electroluminescent** devices comprising of



phenylanthracene derivs.)

RN 172285-83-5 HCA

CN 9,9'-Bianthrane, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA  
INDEX NAME)



IC ICM C07C015-28

ICS C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 74

ST phenylanthracene deriv org **electroluminescent** device; blue  
emitting **electroluminescent** device phenylanthracene

IT **Electroluminescent** devices

(blue-emitting; **electroluminescent** devices comprising  
of phenylanthracene derivs.)

IT **172285-83-5P** 312497-10-2P 312497-12-4P 312497-14-6P  
312497-16-8P 312497-18-0P

(**electroluminescent** devices comprising of  
phenylanthracene derivs.)

IT 131-09-9, 2-Chloroanthraquinone 434-84-4, 10,10'-Bianthrone  
434-85-5, Bianthrone 2052-07-5, 2-Bromobiphenyl 3282-24-4  
3282-25-5 43217-28-3, 2-Chloro-9,10-diphenylanthracene  
126866-29-3 312497-23-7

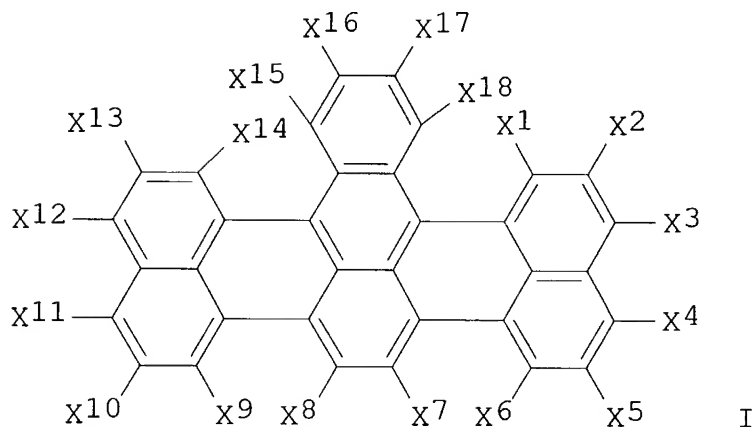
(**electroluminescent** devices comprising of  
phenylanthracene derivs.)

L51 ANSWER 19 OF 22 HCA COPYRIGHT 2004 ACS on STN

132:173447 Tetrabenzopentaphene and organic **electroluminescent**  
device. Nakatsuka, Masakatsu (Mitsui Chemicals Inc., Japan). Jpn.

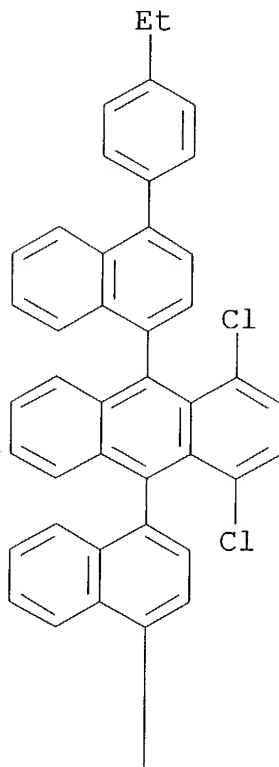
Kokai Tokkyo Koho JP 2000044498 A2 20000215, 52 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 1998-213688 19980729.

GI

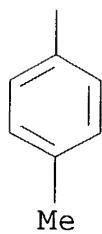


- AB The **electroluminescent** device has  $\geq 1$  layer contg.  
 $\geq 1$  tetrabenzo[de,h,kl,rst]pentaphene deriv. I [X1-X18 = H,  
 halogen, linear, branched, or cyclic alkyl, linear, branched, or  
 cyclic alkoxy, (substituted) aryl; except for all X = H] sandwiched  
 between a pair of electrodes. The device shows improved brightness.
- IT 257948-34-8 257948-40-6 257948-41-7  
 (electroluminescent device having tetrabenzopentaphene  
 from)
- RN 257948-34-8 HCA
- CN Anthracene, 1,4-dichloro-9-[4-(4-ethylphenyl)-1-naphthalenyl]-10-[4-  
 (4-methylphenyl)-1-naphthalenyl]- (9CI) (CA INDEX NAME)

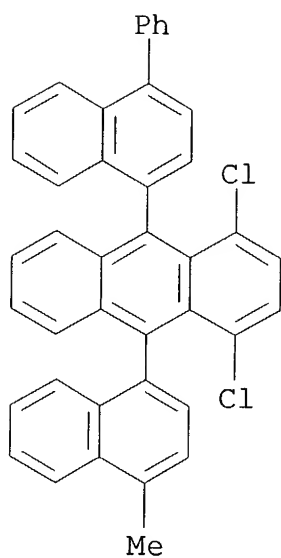
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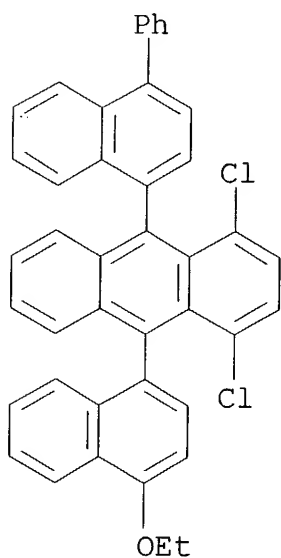


RN 257948-40-6 HCA  
CN Anthracene, 1,4-dichloro-9-(4-methyl-1-naphthalenyl)-10-(4-phenyl-1-naphthalenyl)- (9CI) (CA INDEX NAME)



RN 257948-41-7 HCA

CN Anthracene, 1,4-dichloro-9-(4-ethoxy-1-naphthalenyl)-10-(4-phenyl-1-naphthalenyl)- (9CI) (CA INDEX NAME)



IC ICM C07C013-62

ICS C07C022-08; C07C025-22; C07C043-21; C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 24

ST **electroluminescent** device tetrabenzopentaphene

IT **Electroluminescent** devices

(**electroluminescent** device having tetrabenzopentaphene sandwiched between electrodes)

IT 257948-02-0 257948-03-1 257948-04-2 257948-05-3 257948-06-4  
257948-07-5 257948-08-6 257948-09-7 257948-10-0 257948-11-1  
257948-12-2 257948-13-3 257948-14-4 257948-15-5 257948-16-6  
257948-17-7 257948-18-8 257948-19-9 257948-20-2 257948-21-3  
257948-22-4 257948-23-5 257948-24-6 257948-25-7 257948-26-8  
257948-27-9 257948-28-0 257948-29-1 257948-30-4 257948-31-5  
257948-32-6 257948-33-7 **257948-34-8** 257948-35-9  
257948-36-0 257948-37-1 257948-38-2 257948-39-3  
**257948-40-6 257948-41-7** 257948-42-8  
257948-43-9

(**electroluminescent** device having tetrabenzopentaphene from)

IT 188-13-6, Tetrabenzo[de,h,kl,rst]pentaphene

(**electroluminescent** device having tetrabenzopentaphene sandwiched between electrodes)

IT 257947-56-1P 257947-57-2P 257947-58-3P 257947-59-4P  
257947-60-7P 257947-61-8P 257947-62-9P 257947-63-0P  
257947-64-1P 257947-65-2P 257947-66-3P 257947-67-4P  
257947-68-5P 257947-69-6P 257947-70-9P 257947-71-0P  
257947-72-1P 257947-73-2P 257947-74-3P 257947-75-4P  
257947-76-5P 257947-77-6P 257947-78-7P 257947-80-1P  
257947-81-2P 257947-82-3P 257947-84-5P 257947-85-6P  
257947-86-7P 257947-87-8P 257947-88-9P 257947-89-0P  
257947-90-3P 257947-91-4P 257947-92-5P 257947-93-6P  
257947-94-7P 257947-95-8P 257947-96-9P 257947-98-1P  
257948-00-8P 257948-01-9P

(**electroluminescent** device having tetrabenzopentaphene sandwiched between electrodes)

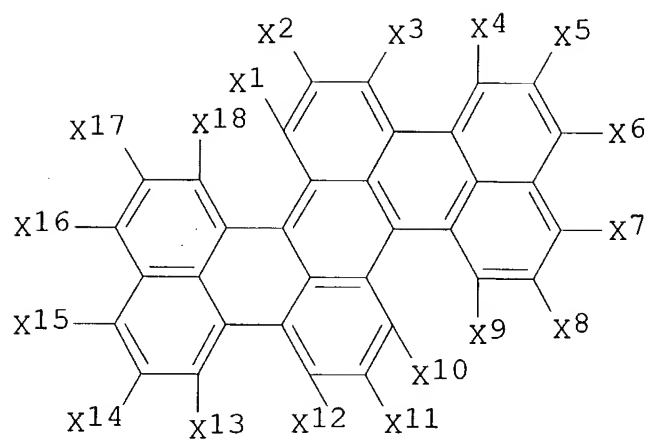
IT 24601-13-6, Bis(2-methyl-8-quinolinolato)aluminum- $\mu$ -oxobis(2-methyl-8-quinolinolato)aluminum 65181-78-4 123847-85-8

(in **electroluminescent** device having tetrabenzopentaphene sandwiched between electrodes)

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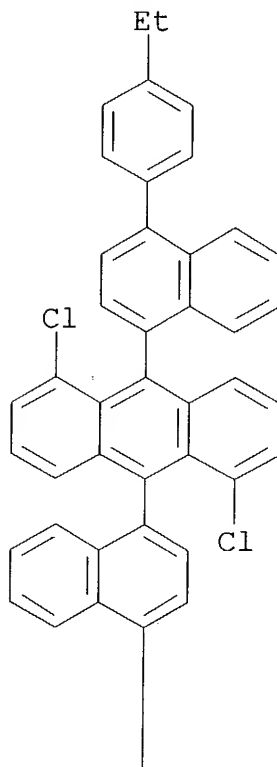
132:144223 Pentacene derivatives and high-luminance organic **electroluminescent** devices using them. Nakatsuka, Masakatsu (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2000038353 A2 20000208, 52 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-206468 19980722.

GI

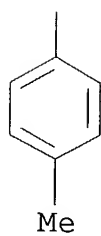


- AB The devices have  $\geq 1$  layer(s) contg. tetrabenz[de,hi,op,st]pentacene derivs. between a pair of electrodes. The derivs. comprise I [X1-X18 = H, halo, (un)substituted alkyl, alkoxy, aryl].
- IT **256483-33-7 256483-39-3 256483-40-6**  
 (dechlorination and ring closure of; tetrabenzopentacene derivs. for high-luminance org. electroluminescent devices)
- RN 256483-33-7 HCA
- CN Anthracene, 1,5-dichloro-9-[4-(4-ethylphenyl)-1-naphthalenyl]-10-[4-(4-methylphenyl)-1-naphthalenyl]- (9CI) (CA INDEX NAME)

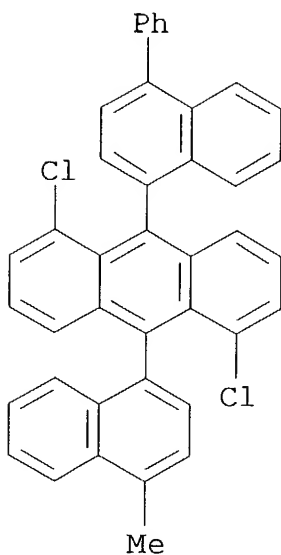
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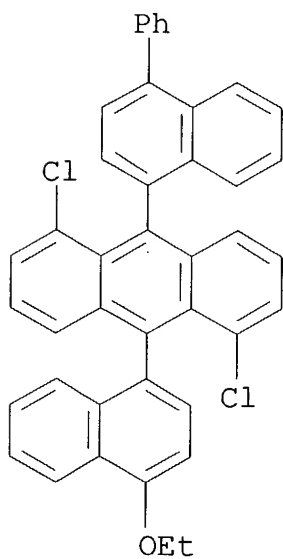
PAGE 2-A



RN 256483-39-3 HCA  
 CN Anthracene, 1,5-dichloro-9-(4-methyl-1-naphthalenyl)-10-(4-phenyl-1-naphthalenyl)- (9CI) (CA INDEX NAME)



CN Anthracene, 1,5-dichloro-9-(4-ethoxy-1-naphthalenyl)-10-(4-phenyl-1-naphthalenyl)- (9CI) (CA INDEX NAME)



IC	ICM	C07C013-62
	ICS	C07C022-08; C07C025-22; C07C043-21; C09K011-06; H05B033-14; H05B033-22
CC		73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)



Section cross-reference(s): 25

ST tetrabenzopentacene **electroluminescent** device luminance improvement

IT **Electroluminescent** devices

(tetrabenzopentacene derivs. for high-luminance org. **electroluminescent** devices)

IT 103269-04-1 256483-02-0 256483-03-1 256483-04-2 256483-05-3  
256483-06-4 256483-07-5 256483-08-6 256483-09-7 256483-10-0  
256483-11-1 256483-12-2 256483-13-3 256483-14-4 256483-15-5  
256483-16-6 256483-17-7 256483-18-8 256483-19-9 256483-20-2  
256483-21-3 256483-22-4 256483-23-5 256483-24-6 256483-25-7  
256483-26-8 256483-27-9 256483-28-0 256483-29-1 256483-30-4  
256483-31-5 256483-32-6 **256483-33-7** 256483-34-8  
256483-35-9 256483-36-0 256483-37-1 256483-38-2  
**256483-39-3 256483-40-6 256483-41-7**  
256483-42-8

(dechlorination and ring closure of; tetrabenzopentacene derivs. for high-luminance org. **electroluminescent** devices)

IT 124513-90-2P 256482-61-8P 256482-62-9P 256482-63-0P  
256482-64-1P 256482-65-2P 256482-66-3P 256482-67-4P  
256482-68-5P 256482-69-6P 256482-70-9P 256482-71-0P  
256482-72-1P 256482-73-2P 256482-74-3P 256482-75-4P  
256482-76-5P 256482-77-6P 256482-78-7P 256482-79-8P  
256482-80-1P 256482-81-2P 256482-82-3P 256482-83-4P  
256482-84-5P 256482-85-6P 256482-86-7P 256482-87-8P  
256482-88-9P 256482-89-0P 256482-90-3P 256482-91-4P  
256482-92-5P 256482-93-6P 256482-94-7P 256482-95-8P  
256482-96-9P 256482-97-0P 256482-98-1P 256482-99-2P  
256483-00-8P 256483-01-9P

(tetrabenzopentacene derivs. for high-luminance org. **electroluminescent** devices)

L51 ANSWER 21 OF 22 HCA COPYRIGHT 2004 ACS on STN

132:17010 Organic **electroluminescent** device. Higashiguchi, Toru; Ishikawa, Hitoshi; Oda, Atsushi (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11339963 A2 19991210 Heisei, 32 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-141492 19980522.

GI For diagram(s), see printed CA Issue.

AB An org. **electroluminescent** device comprises a compd. represented by Ar1-Ar2, Ar1-Ar3-Ar2, and Ar1-Ar3-Ar4-Ar2 [ Ar1 and Ar2 are represented by I, II, and III; Ar3 and Ar4 are represented by IV, V, VI VII and VIII; R1-14 = H, halo, OH, amino, etc.; A1-13 = condensed hydrocarbon or heterocyclic ring].

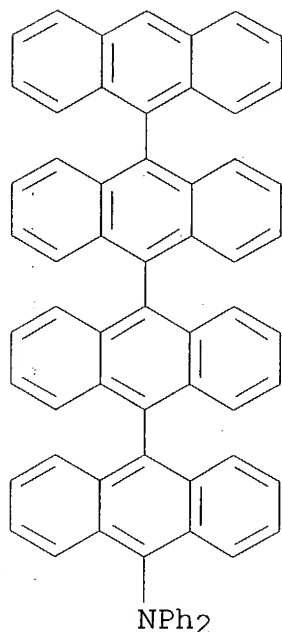
IT **251363-51-6**

(org. **electroluminescent** device)

RN 251363-51-6 HCA

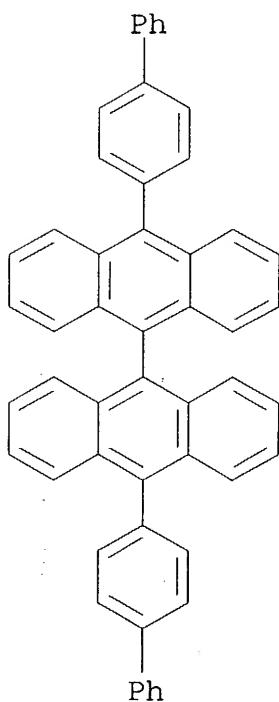
CN [9,9':10',9'':10'',9'''-Quateranthracen]-10-amine, N,N-diphenyl-

(9CI) (CA INDEX NAME)

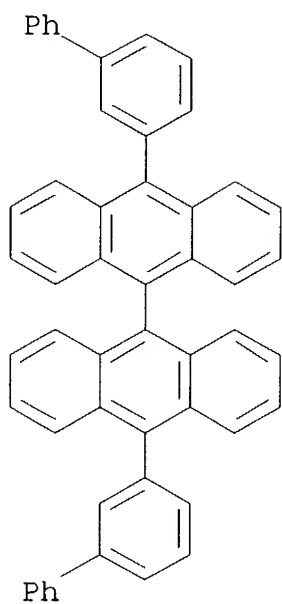


- IC ICM C09K011-06  
ICS C09K011-06; H05B033-14
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25
- ST org **electroluminescent** device aryl compd
- IT **Electroluminescent** devices  
(org. **electroluminescent** device)
- IT 205985-80-4, 9,9':10',9''-Teranthracene 220721-68-6 224051-93-8,  
9,9':10',9'':10'',9'''-Quateranthracene 251362-95-5 251362-96-6  
251363-46-9 **251363-51-6** 251363-60-7  
(org. **electroluminescent** device)
- IT 84-65-1, Anthraquinone 90-11-9 90-44-8, Anthrone 93-61-8,  
N-Methylformanilide 122-39-4, Diphenylamine, reactions 128-08-5,  
N-Bromosuccinimide 1564-64-3, 9-Bromoanthracene 7439-93-2,  
Lithium, reactions 7439-95-4, Magnesium, reactions 49610-33-5  
121848-75-7, 10,10'-Dibromo-9,9'-bianthryl  
(org. **electroluminescent** device)
- L51 ANSWER 22 OF 22 HCA COPYRIGHT 2004 ACS on STN  
124:71121 Phenylanthracene derivative and organic **EL** element.  
Inoue, Tetsushi; Nakaya, Kenji (TDK Corp., Japan). Eur. Pat. Appl.  
EP 681019 A2 19951108, 73 pp. DESIGNATED STATES: R: DE, FR, GB,  
NL. (English). CODEN: EPXXDW. APPLICATION: EP 1995-302767  
19950425. PRIORITY: JP 1994-110569 19940426.

- AB Phenylanthracene derivs. of the formula A1-L-A2 (A1 and A2 each are a monophenylanthryl or diphenylanthryl group and L is a valence bond or a divalent linkage group, typically arylene) are described. Their use as org. compd. layers of org. **electroluminescent** (EL) devices, esp. as **light-emitting** layers for blue **light emission** or as electron injecting and transporting layers, is indicated.
- IT 172285-79-9P 172285-82-4P 172285-83-5P  
(phenylanthracene derivs. and org. **electroluminescent** elements)
- RN 172285-79-9 HCA
- CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

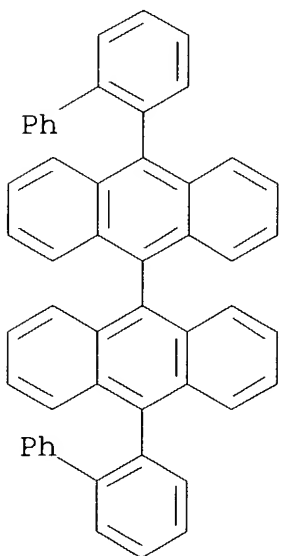


- RN 172285-82-4 HCA
- CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-3-yl)- (9CI) (CA INDEX NAME)



RN 172285-83-5 HCA

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA  
INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 25, 76

ST phenylanthracene deriv **electroluminescent** device

IT **Electroluminescent** devices

(phenylanthracene derivs. and org. **electroluminescent** elements)

IT 65181-78-4

(phenylanthracene derivs. and org. **electroluminescent** elements)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 15570-45-3 51325-05-4,  
Poly(thiophene-2,5-diyl) 169224-61-7

(phenylanthracene derivs. and org. **electroluminescent** elements)

IT 172285-72-2P 172285-73-3P 172285-76-6P

(phenylanthracene derivs. and org. **electroluminescent** elements)

IT 23102-67-2P 120335-70-8P 172285-74-4P 172285-75-5P

172285-77-7P 172285-78-8P **172285-79-9P** 172285-80-2P

172285-81-3P **172285-82-4P** **172285-83-5P**

172285-84-6P 172285-85-7P 172285-86-8P 172285-87-9P

172285-88-0P 172285-89-1P

(phenylanthracene derivs. and org. **electroluminescent** elements)

IT 84-65-1, Anthraquinone 366-18-7, 2,2'-Bipyridine 434-85-5,  
Bianthrone 1295-35-8, Bis(1,5-cyclooctadiene)nickel 3001-15-8,  
4,4'-DiIodobiphenyl 4294-57-9, 4-Methylphenylmagnesium bromide  
43217-27-2, 1-Chloro-9,10-diphenylanthracene 43217-28-3,  
2-Chloro-9,10-diphenylanthracene

(phenylanthracene derivs. and org. **electroluminescent** elements)